Number 1
Volume XLVIII

OCTOBER, 1914

$2.00 per year
$3.00 with Directory

TEXTILE WORLD RECORD

Annual Convention
of
The National Association
of
Cotton Manufacturers
at
Lenox, Mass.

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LORD & NAGLE COMPANY ~ BOSTON·MASS.

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The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

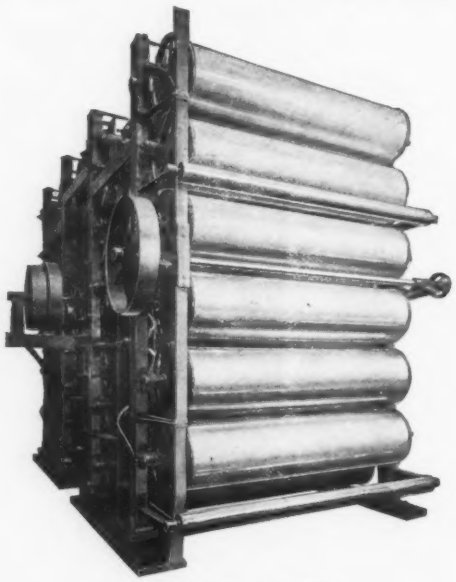
BUILDERS OF

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants



Upright Drying Machine

ALL KINDS OF

Horizontal and Upright Drying Machines

With cylinders made from either the best English tinned iron or best Lake Superior sheet copper, fitted with our

Patent Spiral Scoops

Bleaching Kiers with Patent Circulators

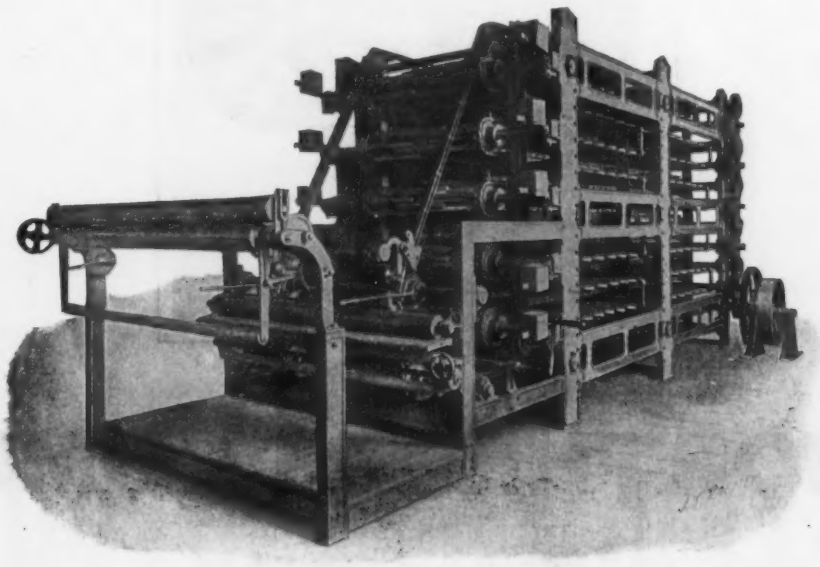
FOR

Raw Stock, Yarn, Woven and Knit Goods

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

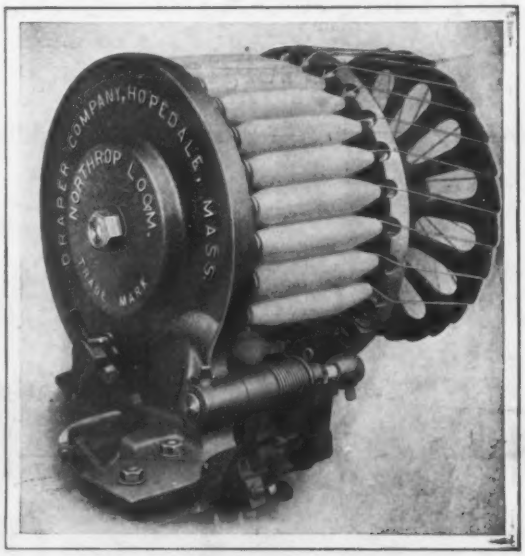
Providence, Room 417, Industrial Trust Building.



Return Tentering Machine—Low-down Platform, for Woolen and Worsted Goods.

Bleaching, Dyeing Drying and Finishing Machinery

for all kinds of textile fabrics.



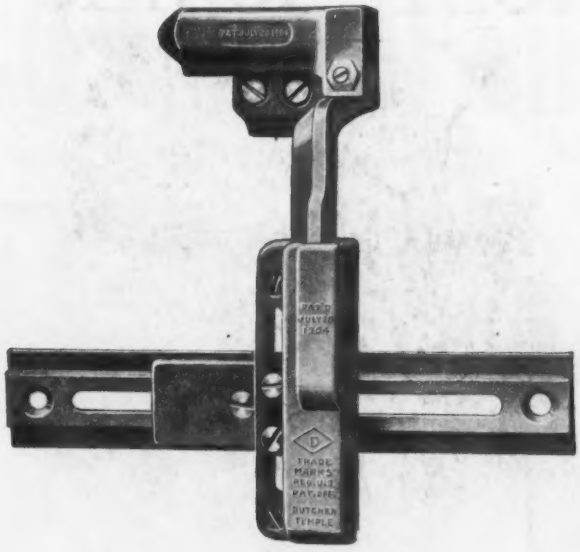
NORTHROP LOOMS

TRADE MARK REGISTERED

EARN More Wages for the Weaver
Larger Dividends for the Mill

DRAPER COMPANY

HOPEDALE MASS.



DUTCHER TEMPLES

Trade Mark Reg. U. S. Pat. Off.

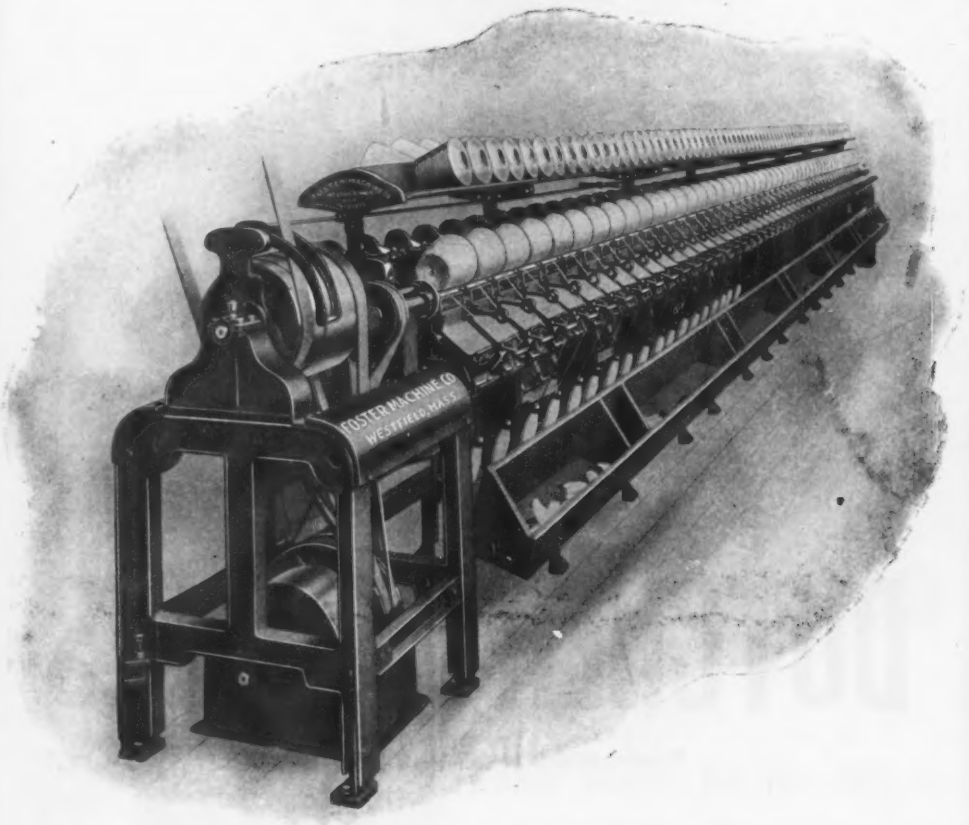
DRAPER COMPANY

SOLE MANUFACTURERS

HOPEDALE MASS.

J. D. CLOUDMAN Southern Agent 40 So. Forsyth St. Atlanta Ga.

Foster Machine Co.



The Foster Model 12 differential attachment spaces the yarn on the cone in winding so as to secure in the Knitting process a light unwinding tension that does not change from start to finish of cone. ¶ This is *one* of the exclusive features that has made the Foster Finished cone acceptable to all Knitters.

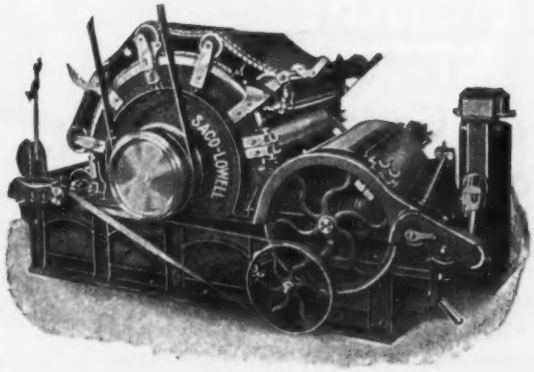
Office and Works

Westfield, - - Massachusetts

John Hill, So. Agent, Third National Bank Bldg., Atlanta, Ga.

Saco-Lowell Shops

TEXTILE MACHINERY



Shops—
Lowell, Mass.
Biddeford, Maine
Newton Upper Falls, Mass.

Executive Offices—
77 Franklin Street
Boston, Mass.

Southern Agent, ROGERS W. DAVIS,
Charlotte, N. C.

COMPLETE COTTON MILL EQUIPMENT
Including:
Pickers
Cards
Drawing
Evener Drawing
Roving
Spinning
Twisters
Slashers
Spoolers
Reels
Winders
Warpers
Looms

WASTE RECLAIMING MACHINERY

WORSTED MACHINERY
Including:
Revolving Creels,
Gill Boxes
Drawing Frames,
Reducing and Roving Frames,
Cap Ring and Flyer Spinning and Twisting Frames
Jack Spoolers

LEIGH & BUTLER

SUCCESSORS TO

EVAN ARTHUR LEIGH

232 Summer Street opposite the South Station), Boston, Mass.

SOLE AGENTS

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen & Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber—will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Wastes into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery

Archbutt-Deeley System for purifying and softening water.

JOSEPH SYKES BROS. Card Clothing for Cotton.
JAMES CRITCHLEY & SONS. Card Clothing for Woolen and Worsted.
WILSON BROS. BOBBIN CO. Bobbins, Shuttles, Etc.
THOMAS B. HAIGH. Double Loop Bands, Spinning Tape, Etc.
DRONSFIELD BROTHERS. Grinding Machinery and Emery Filleting.
HARDING'S Fallers, Pins and Circles.
The Best French and English Combing and Rubbing Aprons.
Card Flats reclothed and Lickers-in rewound.

COLD DAYS COMING

Yarns hard, fibers brittle, machinery stiff, production slow — *trouble! trouble! But* **every**

"CARRIER EQUIPPED" mill will be running smoothly, turning out a full, even production.

WHY?

Because every man who owns a Carrier is complete master of the climate inside his plant. He controls its temperature, humidity and ventilation. Just think of it!

Want to know more? Then write us.

Carrier Air Conditioning Co.

Of America

No. 39 Cortlandt Street, New York City

NEW ENGLAND
176 Federal Street
Boston

CHICAGO
Ft. Dearborn Bldg.
Clark and Monroe Sts.

PHILADELPHIA
734 Real Estate Trust Bldg.

BUFFALO, 490 Broadway

COTTON MILL MACHINERY

Carding Spinning

MASON MACHINE WORKS

Drawing Weaving

Executive Office, 77 Franklin Street, Boston, Mass.
Arthur R. Sharp, Treas.; Thomas G. Cox, Agent

Southern Office, Greenville, S. C., Edwin Howard

Works at Taunton, Mass.

In a comparative test of several mill whites the Northwestern Knitting Co. (Munsing Wear) of Minneapolis selected Rice's Mill White and placed an order for a car-load—and Rice's cost more than any of the others.

RICE'S MILL WHITE

is the only oil paint without varnish giving a glossy, tile-like finish. It will give you 19 to 36 per cent. more light than you had before. It can be washed like tile. It will not collect dirt, germs and odors like a flat paint. It will not scale and require frequent renewals like a cold water paint. It will not "alligator" and crack under the jar of machinery like a varnish paint. *It stays white longer than any other gloss paint.*

Rice's Mill White, the original Mill White, made a trade name of the words "Mill White." It has no substitute. No other paint manufacturer can use the Rice process. No imitation has its elastic, permanent qualities. For ten years it has been unequalled for illuminating power, sanitary qualities and low ultimate cost.

Write for Booklet and Sample Board.

Ask for a copy of our Booklet, "More Light." Write today.

U. S. GUTTA PERCHA PAINT CO.

No. 20 Dudley St. **Providence, R. I.**

Parks' Piping Parables

Piping is not an esthetic subject. It has little of the artistic in it. Most of it is purely utilitarian; put in to use, for work.

Therefore, it is hardly a safe proposition for the artistic temperament, but should be placed in the hands of trained engineers or hard-headed, practical men—or a combination of the two, if these qualities can be found combined in one man.

Some little time ago I had something to say about piping service. To be of service to you, your piper must be as conscientious about your work as if it were for himself.

To be of service to him, you must expect and permit a reasonable profit; otherwise on that particular occasion you are of no service to him—and service to be beneficial is mutual.

All this is not new. It has the merit of having been said before, and the merit of having been tried out.

I know it has worked well, so I speak with some measure of authority.

To get good piping and not get stuck, in the manner after which I propose, may seem almost revolutionary.

The statement has been made before in this publication that in looking at the power problem of a mill, the place to gauge economy in fuel is at the coal pile and not at the engine only.

Usually the engine isn't the whole of the problem.

One of our good friends doubled the size of his mill about three years ago, necessitating new boilers, new engines, etc.

We did the piping on the trust-it-all-to-you basis—all but one point.

Some one had told him that a condenser was a good thing and the only point in which he insisted on having his own way was that the engine should be arranged to run condensing.

Inasmuch as the plant is a woolen mill, we argued as strongly as we dared against it. The engine was of ample size to run the plant easily non-condensing, and there were many places about the mill where the exhaust steam could be continuously utilized. But our advice did not prevail.

The condenser was bought.

The only place to put it was in a dark pit under the engine room floor.

This pit developed a tendency to act as a cesspool for the surrounding country, so that in a few months it had the appearance and some other symptoms of a sewage purification works.

In the course of a year and a half the condenser broke. It then became necessary to run the engine non-condensing, and the engineer may possibly be pardoned for continuing to do so because of the aforesaid and above-mentioned conditions which existed in that pit. Even a son of Ham would have looked blacker after working there fifteen minutes.

But because the piping as originally installed did not permit of the utilization of the exhaust, naturally under these new conditions the fuel consumption ran up.

This condition continued for about a year and a half, during which time four 150 H.P. boilers were worked to their limit, to make steam enough to run the plant. The damper regulator had no work to do, because it simply held the main damper open all the time. In order to keep steam up, the fireman had to hump himself.

Two months ago the owner called us in on consultation.

A rearrangement of the piping, to conform to the suggestions made three years ago, has just been finished, changing the system so as to utilize the exhaust steam in every possible place where live steam was previously used.

The engine is now being run at six pounds back pressure instead of condensing. Wouldn't the average engineer throw up his hands in holy horror at the idea of decreasing the fuel consumption by such a process?

The fact remains, however, that two boilers are now running the plant where four were required before. Exhaust steam is used at every point where live steam was formerly used, with the result that today the only place where live steam goes from the boilers is to the engine. The exhaust steam is furnishing hot water for dyeing purposes, is boiling the dye-tubs, boiling the soap-tubs, heating the cloth dryer, and heating the mill when needed.

PARKO

The G. M. Parks Company, Fitchburg, Massachusetts

Complete Vaporization

OF ALL THE WATER USED

Fundamentally that is the reason for the distinctively satisfactory results obtained from the use of

The Turbo Humidifier

There is no impure, second-hand water; there is no overflow; no necessity for "push clean-outs," drain pipes, strainer cloths, or moving parts.

These things mean economy in operation, little or no attention for up-keep or maintenance

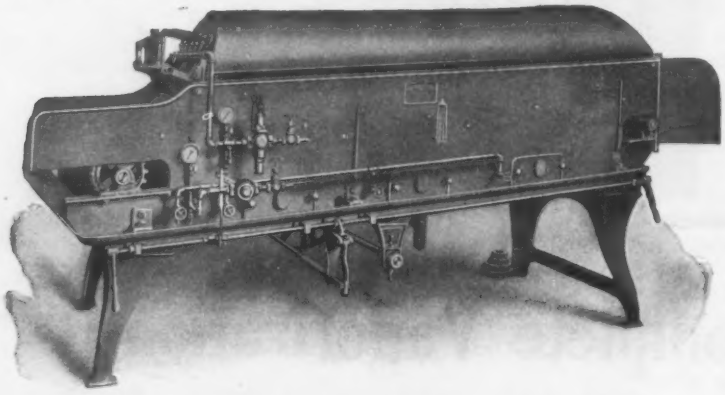
Briefly put, the Turbo Humidifier should be used in your mill, because it will improve the working conditions and help you increase the quantity and quality of your output—we have a catalog that will prove this. We would like to send it to you with or without a Turbo engineer—you can ask for one or both without obligating yourself in any way.

The G. M. Parks Company
Fitchburg, Mass.

Southern Office, 200 Commercial Bank Building. J. S. Cothran, Mgr.

The Yarn Conditioning Machine

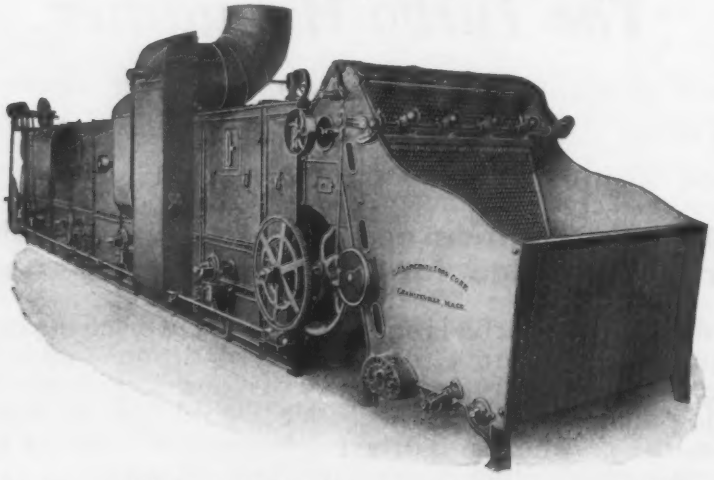
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

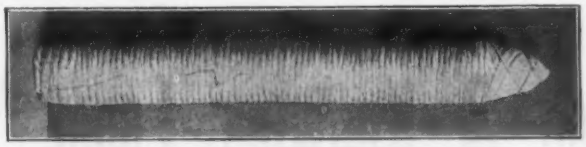
Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



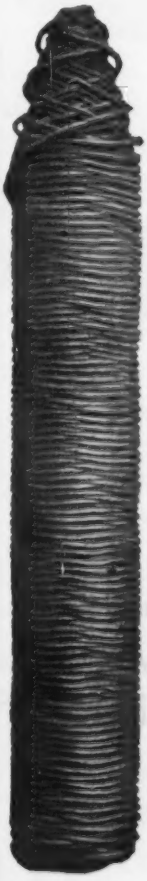
Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

C. G. Sargent's Sons Corp., Graniteville, Mass.

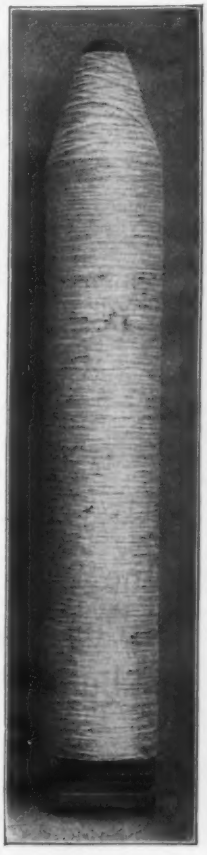


No. 2

No. 1 and No. 2—Cops to weave from inside seven-eighths to three inches diameter and up to seventeen inches long. Suitable for various kinds of coarse goods such as grass matting, cotton bagging, cocoa matting, all kinds of carpets, felts, chinchilla, linen, jute, flax, asbestos, hose and narrow fabrics such as wicks, belting, webbing, surcingles, halters, etc.



No. 3 and No. 4 Shuttle Bobbins from seven-eighths to two inches in diameter and any length up to twelve inches. Suitable for all kinds of duck, upholsteries, tapestries, asbestos, ratana or any kind of fancy yarns for automatic or other looms.



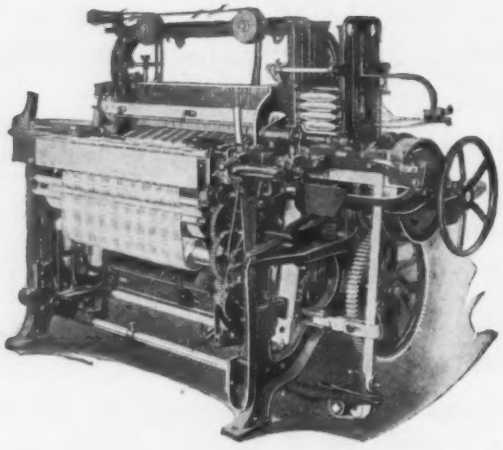
No. 1 No. 4 No. 3

OSWALD LEVER CO., Inc.

Lehigh Avenue and Front Street, Philadelphia, Pa.

Builders of Textile Machinery WINDERS ESPECIALLY

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

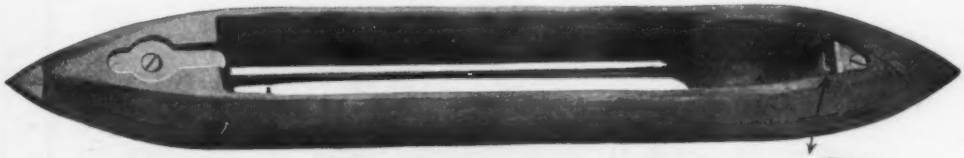
WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

New Hand-Threading Shuttle

The Caron Patent Hand Threader



This "THROAT PLATE" (slightly enlarged) is so designed that the Yarn *cannot "Balloon"*

This "SIDE EYE" (slightly enlarged), made in two parts, *prevents unthreading.*

The Simplest and Most Quickly Threaded Shuttle Made

It can be filled with the finest silk or the coarsest filling—will neither *unthread* nor "*balloon*"—lint that accumulates is easily removed—felt can be inserted for tension purposes—and being a hand-threading shuttle, it is sanitary.

This shuttle is entirely different from all others. It has been severely tested for a year by large mills and is the most effective hand threader on the market.

Trial orders solicited—Satisfaction guaranteed

Paper Cop Tubes Cones and Shells

Send your samples and we will quote prices on any lot desired

Shuttles and Shuttle Irons

For All Textile Purposes

American Textile Specialty Machinery Co.

670 Eddy Street - Providence, R. I.

13th St. and Boulevard, Long Island City

The Hunter

NO. 10
FULLING
MILL

DRIVING SIDE

GEAR DRIVE

CLOTH WASHERS

PEICE DYE
KETTLES

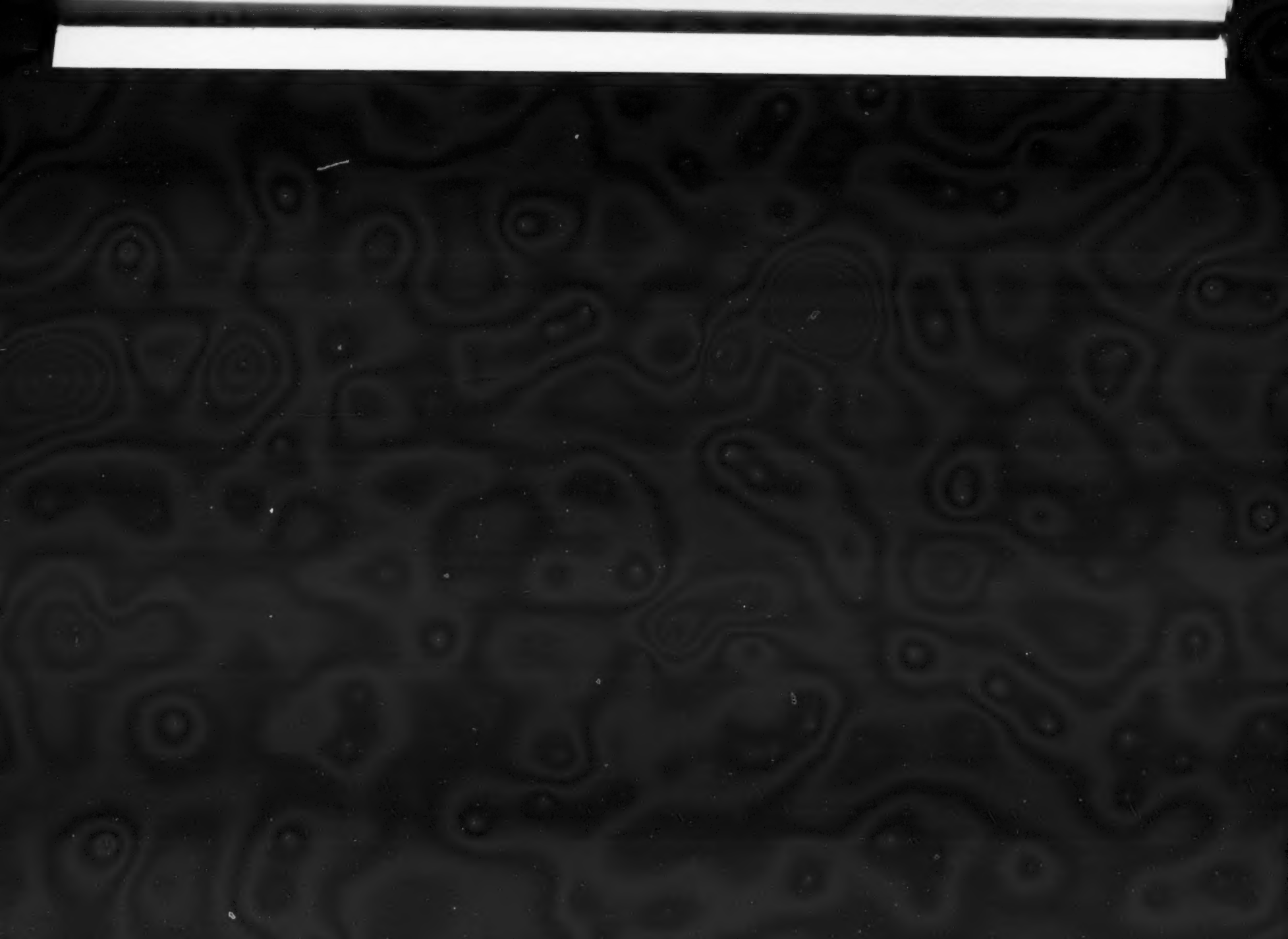
SOAPING
MACHINES

BELT DRIVE

ROPE DRIVE

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.



ECONOMY AND SAFETY

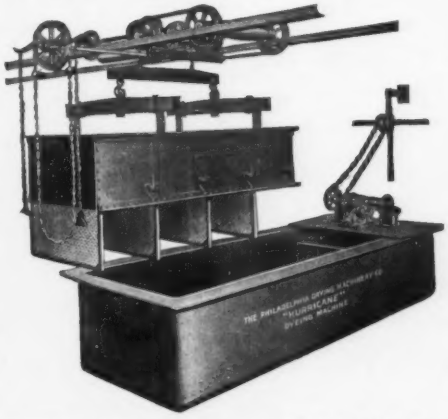
YOU GET BOTH WITH

"Hurricane" Machinery

FOR

HOSIERY
SKEIN
YARN
SLUBBING
etc.

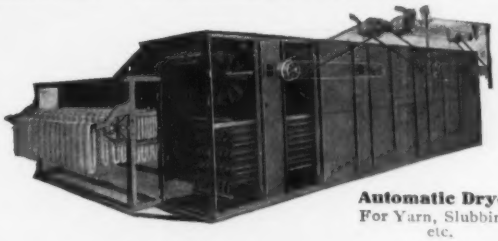
The best and mosteconomical Dyeing Machines



BETTER DYEING at LESS EXPENSE

Give us an opportunity to prove our claims

"Hurricane" Circulating Dyeing Machines are built in various sizes and types



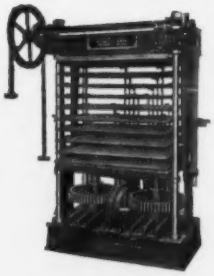
Automatic Dryer
For Yarn, Slubbing, etc.

Complete Equipments for

Dyeing
Scouring
Bleaching
Carbonizing

FIRE-PROOF DRYERS

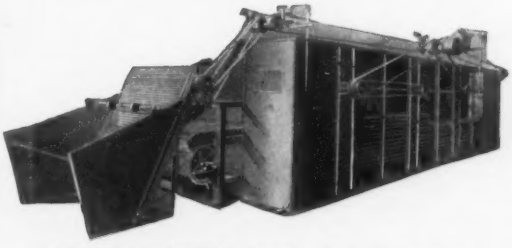
STEEL CONSTRUCTION INSULATED WITH ASBESTOS



Power-Screw and Hydraulic
PRESSES

Fans

Motor and Belt Driven



AUTOMATIC STOCK DRYER
(With Sectional-Continuous Conveyor)
For Cotton, Wool, Hair, Rags, etc.

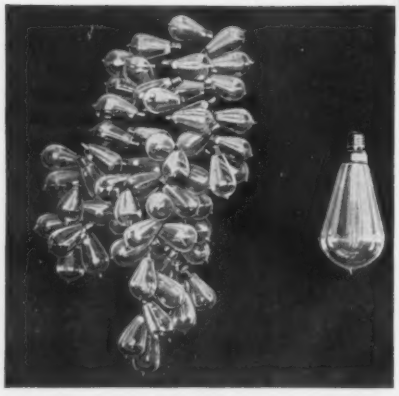
THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works: 6721 Germantown Ave., Phila., Pa. **Boston Office: 53 State Street**

When buying incandescent lamps consider—

Efficiency

in your Lamps and in your Lighting System.



It takes Sixty-two 60-Watt Carbon Lamps to give as much light as one 750-Watt Westinghouse Mazda—a consumption of 3720 watts against 750.

You cannot expect to have an efficient lighting system without using efficient lamps. Unless your lamps provide maximum light at minimum cost—your lighting system is not what it should be.

Westinghouse Mazda Lamps

represent the highest development of the incandescent lamp which means that there does not exist a more efficient lighting unit. In the large sizes these lamps operate at approximately half a watt per candle, which is the best efficiency ever obtained in the manufacture of lamps here or abroad. If your costs interest you—investigate your lamps. If you are not using Westinghouse Mazdas you are not getting the results you should.

Our engineers are at your service to help make your lighting system efficient. A postal to us may mean much to you.

Our bulletin on Industrial Lighting contains many valuable suggestions.

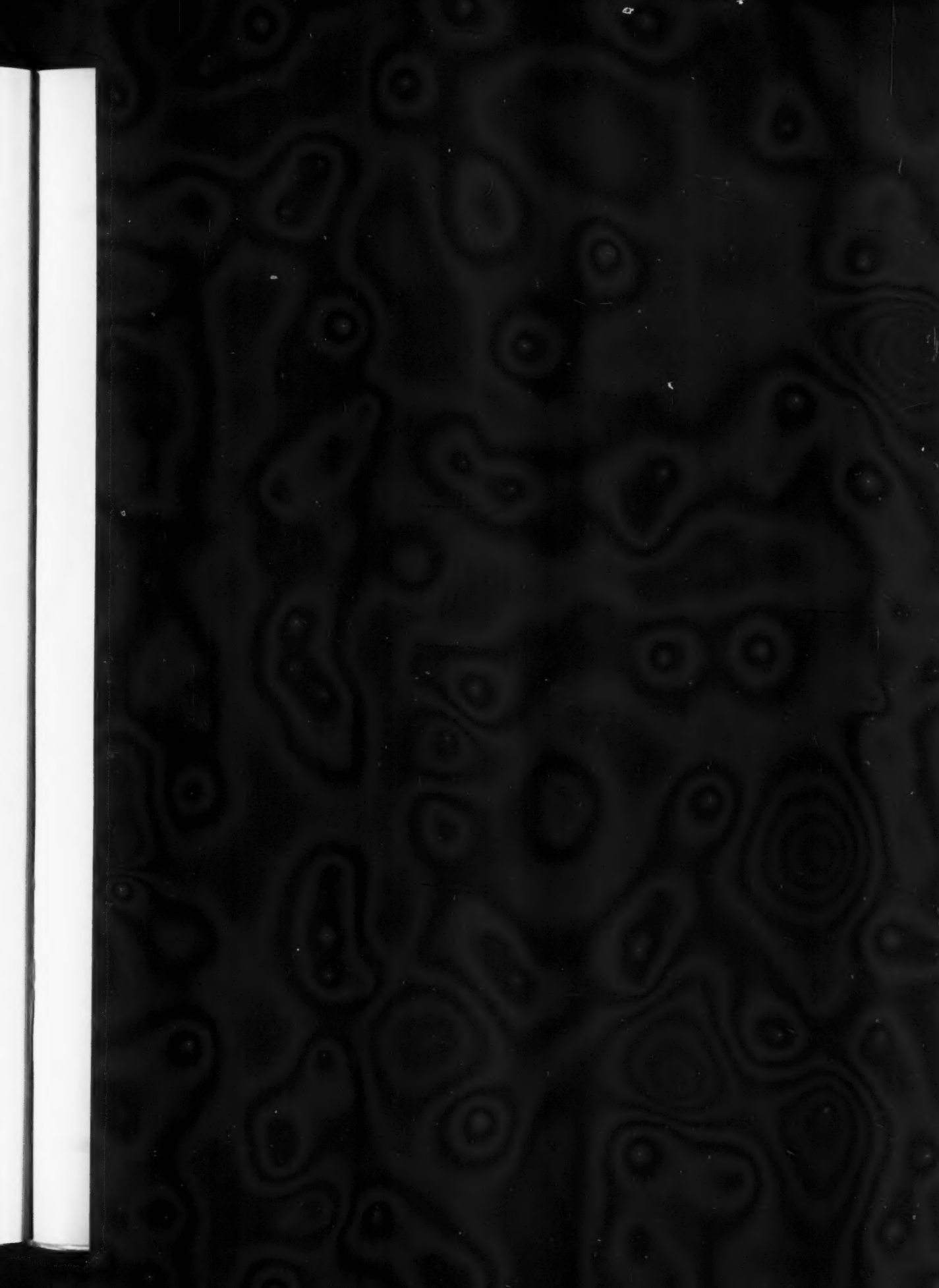
"Guaranteed by the Name"

Westinghouse Lamp Company

Atlanta	Cleveland	Los Angeles	Portland
Baltimore	*Dallas	Memphis	Salt Lake City
Boston	Denver	New York	San Francisco
Buffalo	Detroit	New Orleans	Seattle
Butte	*El Paso	Philadelphia	St. Louis
Chicago	Kansas City	Pittsburg	Syracuse
Cincinnati			

*Westinghouse Lamp Corporation

Distributers of McCandless Mazda Miniature Lamps



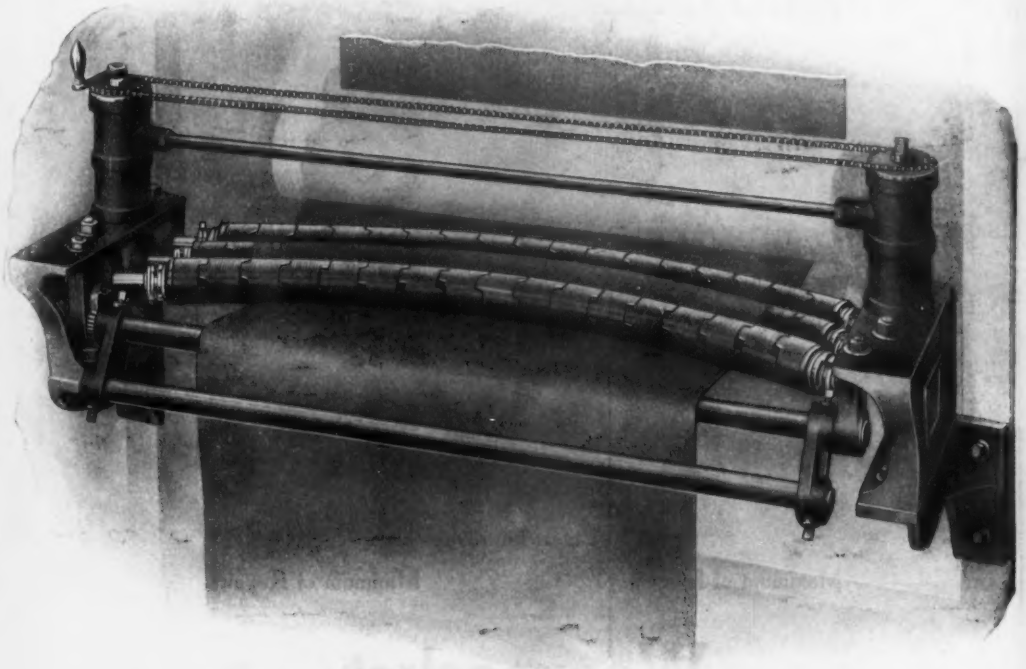
THOMAS LEYLAND & COMPANY

F. T. Walsh, Manager

60 India Street, Boston, Mass. WORKS AT READVILLE, MASS.

Sole Manufacturers of THE WILLIAM MYCOCK

Improved Regulating Cloth Expander

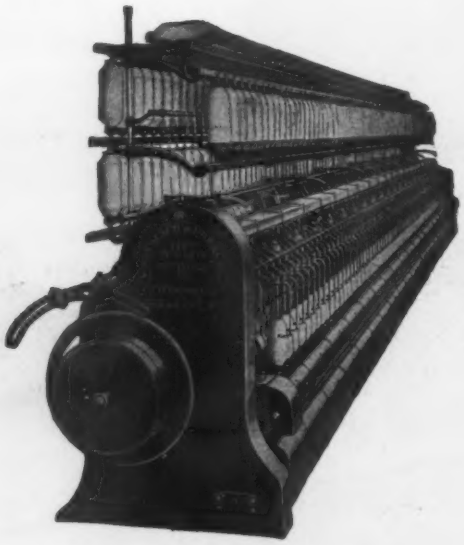


Expander attached to Calendar showing Regulating Motion and Adjustable Tension Bars

This Expander and its improved features are fully protected by basic United States patents, under which the builders will maintain their patent rights against any who may violate such rights by building, selling or using machines of this character.

Scutchers, Sewing Machines, Open Bleaching Machines, Blanket Washers for Calico Printers, Guides, Etc.

Cotton Machinery by Specialists



With Latest Improvements

Maximum of Efficiency Minimum of Repairs

Woonsocket Machine & Press Company

Southern Representative:
J. H. MAYES, Independence Bldg.
Charlotte, N. C.

Northern Representative:
WM. V. THRELFALL, Marshall Bldg.
Boston, Mass.

Cotton Machinery by Specialists

Pickers and Revolving Flat Cards

POTTER & JOHNSTON MACHINE CO.

Pawtucket, R. I.

Drawing and Roving Machinery

WOONSOCKET MACHINE & PRESS CO.

Woonsocket, R. I.

Ring Spinning and Twisting Frames

FALES & JENKS MACHINE CO.

Pawtucket, R. I.

Spoolers, Winders and Reels

EASTON & BURNHAM MACHINE CO.

Pawtucket, R. I.

Southern Representative:
J. H. MAYES, Independence Bldg.
Charlotte, N. C.

Northern Representative:
WM. V. THRELFALL, Marshall Bldg.
Boston, Mass.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch

Lane Canvas Mill Baskets Boxes or Trucks

Found in the Largest and Most Modern Mills

BECAUSE

Durability
Smoothness
Lightness
Economy

FIG.27

Lane Canvas Truck.
Made as shown, or with canvas partition. Mounted on improved **Thread Guard** Wheels, as above, or on swivel casters. Leather bound rim. Heavy duck.

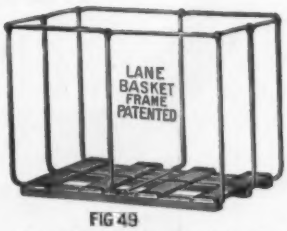


FIG 49

Lane Basket Frame of Tough Spring Steel.
Renewable Hard Maple Shoes.
Also furnished with steel shoes, where dragging is not severe.
Number and diameter of frames varies with size of baskets.

COUNT

A Style for Every Use

W. T. Lane & Brother

Manufacturers

Poughkeepsie **New York**

A. W. BUHLMANN

Textile Engineer

200 FIFTH AVENUE - - NEW YORK

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FRANZ MUELLER

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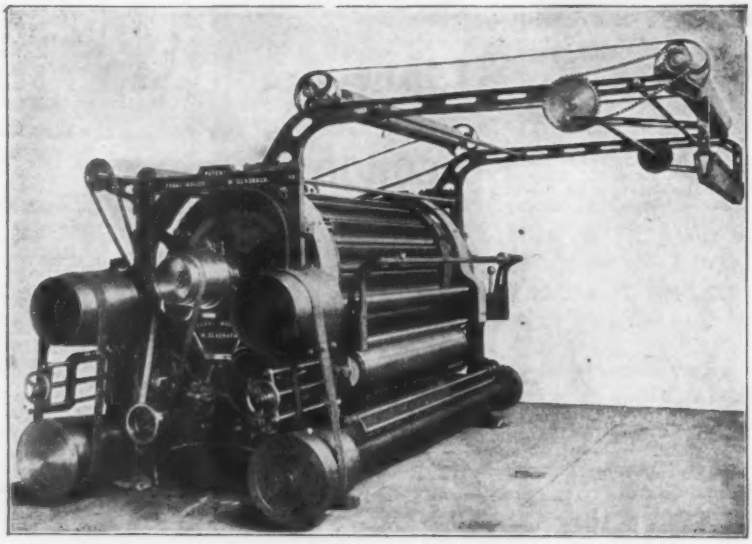


The Mueller 36 Roller Universal Napper

Used by the Leading Firms in America and Europe in preference to any other machine

Why A Time Record But No Belt Record?

Not for a minute would you tolerate an inefficient operator at a modern, high grade machine. Why then should an inferior or incapable belt be used?

But it is not enough to simply start with a skillful mechanic or a high grade belt and let it go at that. You must know what your skilled mechanic accomplishes, you require of him an accurate time and service record. It is just as essential to know the exact service you get from your belting, the conditions under which it operates and the cost of maintenance.

Our Engineering Department has prepared several belt record systems to meet different requirements. These systems are simple yet comprehensive and vary according to the size and kind of mill, number of belts used, etc. By the use of such records every mill, large or small, can effect a material saving in their annual belt expense.

Our Engineers will gladly assist you in the installation of a belt record system and recommend the grades of belting particularly adapted to your requirements. A comparison will convince you of the large saving possible in your plant by the use of our modern efficient product.

May we send you further particulars? There is no obligation and no expense—the service is absolutely gratis.

Consult Us Freely

Graton & Knight Manufacturing Co.

Oak Leather Tanners and Belt Makers

WORCESTER, MASS.

Branches

Atlanta	Detroit
Boston	Fall River
Chicago	Kansas City
Cleveland	Milwaukee
Minneapolis	Portland, Ore.
Montreal, P. Q.	Philadelphia
New Orleans	Pittsburg
New York	San Francisco
St. Louis	Seattle

Selling Agents for Texas

The Graton & Knight Mfg. Co. of Texas

Dallas, Texas

Cramer System
of
Air Conditioning

Cramer "High Duty" Air Conditioner

Cramer Automatic Regulator

FACTS

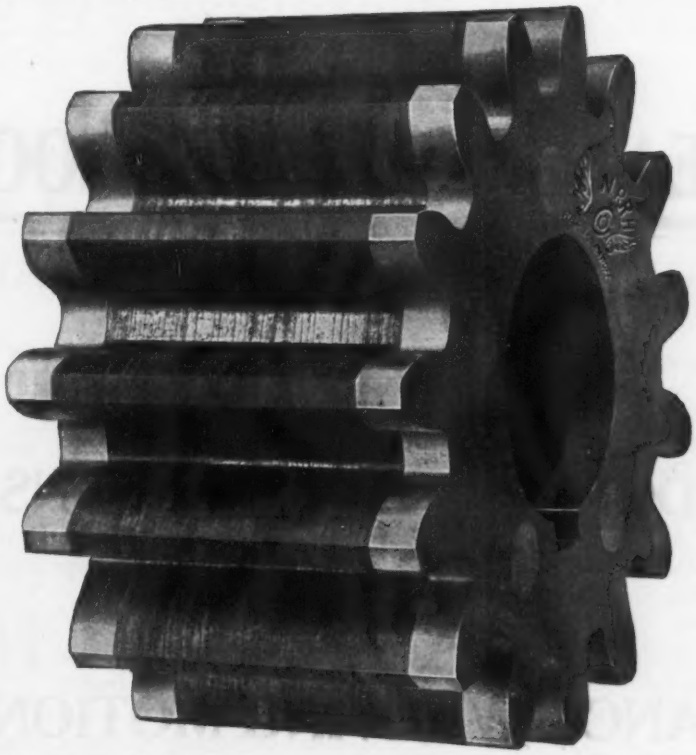
In several large mills equipped with humidifiers of other makes, we have entirely reorganized their system, installing our "High Duty" equipment with automatic humidity and temperature control and the average improvement during the succeeding twelve months test is:

A—Seconds reduced over 50%.
B—Production uniform day after day (No big jumps.)
C—Actual waste account halved.
D—Large saving in "invisible waste."

What Would Similar Results Be Worth To You?

STUART W. CRAMER

50 Church St. New York — **Charlotte, N. C.** — Tremont Bldg. Boston, Mass.



NEW PROCESS NOISELESS PINIONS ARE DURABLE PINIONS

Here is an instance where one set actually outlasted three sets of metal pinions

AT one time the Diamond Drill Contracting Co., Couer d'Alene, Idaho, utilized two 10-in. brass pinions to transmit 45 h. p. at 262 r. p. m. The pinions had to be replaced within a year. Two similar sets of cast iron pinions subsequently used lasted about equal time. The last of these three sets was then replaced by New Process Pinions. The large gears were not changed. Since installation, the New Process Pinions have averaged 23 hours service per day, and after three full years of this severe duty were **still in use and good for more.** The owners say, ***"We consider this remarkable."***

Such occurrences are by no means uncommon. Tell us your conditions

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

N.P.R.H. NEW PROCESS GEAR CORPORATION N.P.R.H.

SYRACUSE, N.Y.

Canadian Agents: Robert Gardner & Son, Ltd., Montreal 99

"IDEAL" AUTOMATIC LOOMS

SILK LOOMS

DOBBIES, BOX MOTIONS

TEMPLES

FANCY WEAVING MOTIONS

THE STAFFORD COMPANY

READVILLE, MASS.

FRED H. WHITE Southern Agent CHARLOTTE, N. C.

Getting Greater Production, Reducing Repair and Maintenance, Here's How—In Textile Mills

PRODUCTION depends largely upon power put to actual use,—in other words, power that reaches the machine. Power generated by the motor that does not reach the machine must necessarily be lost in the transmission system.

MORSE Silent Chains give almost 99% efficiency, sustained throughout their life. That means to you 10 to 20% greater possible production than with any other system for transmitting power.

TEXTILE Machinery in general is not subjected to the severity of service common in other industries, yet high speeds, frequent stopping and starting, and long continuous operation of some machines are apt to cause excessive repairs and maintenance costs unless special provision is made to reduce them.

MORSE Silent Chain Drives are now especially designed for Textile Mill service, and with their use, liability of damage to electric motors, machines or the drive itself, is minimized.

WITH this highly efficient, silent-running drive, you can now satisfy your desire for greater production without increasing the amount of power required and also reduce repair and maintenance costs.

We are always ready and most willing to work in concert with any engineer or manufacturer in solving power transmission problems. Write us for full particulars and free copy of Publication No. 12

Morse Chain Company, Ithaca, N. Y.

BOSTON, 141 Milk Street NEW YORK, 50 Church Street

B-45

Rubber Covered ROLLERS

New Rollers Complete **Rollers Re-Covered**

We furnish rubber-covered rollers for all purposes for which such rollers are or can be used in Textile Mills. The quality of our rubber coverings is rigidly maintained at its well-known high standard,—resulting in satisfaction and the greatest economy to the user.

"ROXBRO" BRAIDED HOSE

A splendid hose for air or water.

Is made of high grade materials, is very durable and flexible.

The best hose obtainable for use in connection with compressed air cleaning systems.

Gives long service and perfect satisfaction.

Can be furnished, if desired, with woven cotton cover, plain or painted

GIVE IT A TRIAL

Rubber Belting Hose of all kinds
Packings Valves Diaphragms Gaskets

BOSTON BELTING COMPANY

Home Office and Factories: BOSTON

NEW YORK BUFFALO CHICAGO SAN FRANCISCO PORTLAND, Ore.

Your Cement Building is full of Holes

Your Cement or Stucco Buildings Need "BAY STATE" Brick and Cement Coating Protection

THE object of "BAY STATE" Brick and Cement Coating is to waterproof and decorate concrete, cement, stucco, plaster and brick surfaces. It overcomes the dull, monotonous color of the ordinary Portland Cement and prevents such surfaces from showing spots, blotches, discoloration or dampness after storms. By filling all of the pores in the surface, it prevents hair cracks and other disfiguration. By excluding dampness it preserves all of the Building Materials as well as insures a dry inside wall.

Write for our newly issued Booklet No. 12 today which contains complete information on the subject of waterproofing and decorating concrete surfaces.

BAY STATE

WADSWORTH, HOWLAND & CO., Inc.

Mfrs. of **Bay State** Brick and Cement Steel Protective **Coating**

Boston, Mass.

BAY STATE

Manufacturers Attention!

Phœnix—Eureka—Zenith

Read the following and it will explain itself:—

I desire to inform you that my experiments with regard to winding *artificial silk* from the Skein to the Cone have been successful.

The Cone is 7½" long, 3" base and 1¼" apex. The amount of yarn—***Artificial Silk*** or Natural Silk—is built up on this cone as on our regular 7½" bobbins. This is 14% more yarn than by the use of the bobbin and the percentage of defective work diminishes considerably by the use of the new shaped cone. ***Do you see the point?***

The advantage of our cone wind is that it gives the same wind as on the bobbins; ***This insures a safer offtake from the new cone than you can get from bobbins,*** as the yarn will not drag on the taper cone like it does on the side of the bobbin when near the last portion.

This is ***Something Entirely New*** in a winding machine which has ***Accomplished Superior Results*** for bobbins. That this new idea will supercede the bobbins we firmly believe from evidence in which you will be interested.

We want you to send us a cone of ***artificial*** or natural silk for re-winding on this machine and we will return it to you, in the new form, showing how much yarn can be placed on the cone by this machine, and the advantages offered by the use of the new shaped cone, also the greater quantity that can be produced over that which the bobbin contains.

The machine is adapted for fine cottons and silks from the skeins.

JACOB K. ALTEMUS

TEXTILE MACHINERY

2844 North Fourth St., Philadelphia, Pa.

The Most Interesting Thing in the World

is Profits and under some general plan of efficiency there are many ways in which the profits in any mill can be *increased.* Even if your mill has reached its highest possible production—even if you are getting the top notch price for your goods and your labor is working along scientifically correct lines—there is still a big chance to INCREASE YOUR PROFITS.

How? Simply by cutting out all waste motion. Eliminate everything that holds back the worker—that interferes with the "every minute" activity of the loom itself. By cutting out everything that can in any way injure the product during the weaving process.

DO THESE THINGS AND YOU'LL BOOST PROFITS QUICK

Take the "Universal" Iron End or for Silk Weaving The "Ideal" Frame as a starter. Here you get a Frame that is built to last. The life of either of these frames is lengthened indefinitely through careful handling and the use of the finest material money can buy.

Take the Flat Steel Heddle

Add to your frame equipment the Flat Steel Heddle—the heddle that automatically adjusts itself on the heddle bar in tune with the vibration of the loom—that wears, and wears, and wears—and you have about gone the limit in cutting costs—in reducing waste—in raising efficiency of your men and in pushing production to its utmost.

Do you want to cut costs? Then write today, place a trial order and let us prove our claims

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Steel Heddle Manufacturing Co.

2100-18 W. Allegheny Ave., Philadelphia, Pa.

Providence (R. I.) Office - - - 76 Dorrance Street

"BRETON"

OILS FOR WOOL

Adapted for All Kinds of Wool Batching

In Daily Use by Leading Mills for Over 25 Years

They are as carefully and accurately prepared to meet textile requirements as long experience and expert chemical knowledge can devise. Only the best of materials are used and every gallon is made in our own factory

Paragon and Union Apron Oils

INCREASE PRODUCTION IN KNITTING MILLS

BORNE, SCRYMSER COMPANY

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BOSTON **PHILADELPHIA**

AUTOMATIC
CLOTH FEEDERS

FOR

Tentering Machines, Dryers, Calenders, etc.

OVER 100 % INVESTMENT

IN SAVING OF LABOR

Prompt Deliveries Assured

Complete equipment for making

ABSORBENT COTTON

AND

ABSORBENT BANDAGE GAUZE

FOR WAR PURPOSES

All kinds of Finishing Machinery for Cotton, Woolen and Worsted Yarns and Cloth

L. H. A. SCHWARTZ & CO.

40 CENTRAL ST., BOSTON, MASS.

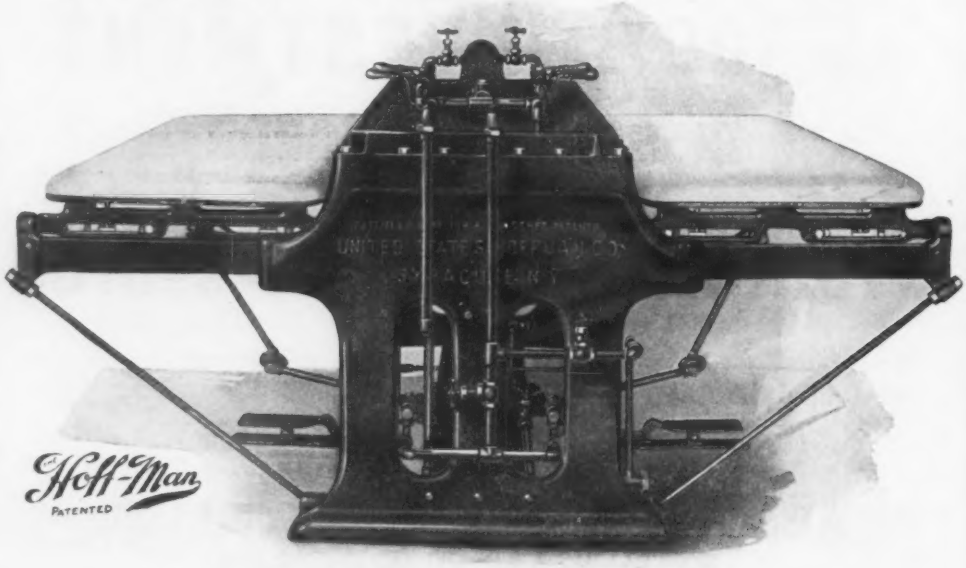
Dealers in China, India, Egyptian and American Cottons

TWO GIRLS

IS ALL THE LABOR REQUIRED TO SUCCESSFULLY AND ECONOMICALLY OPERATE A

Hoffman Underwear Press

THE AVERAGE DAILY PRODUCTION OF A HOFFMAN FFF IS MUCH GREATER THAN CAN BE OBTAINED BY ANY OTHER METHOD OF PRESSING UNDERWEAR—AND THE FINISH IS *WONDERFULLY IMPROVED.*



HOFFMAN FFF MODEL

CAN BE INSTALLED ANYWHERE IN YOUR MILL AS AN INDEPENDENT UNIT

THE HOFFMAN WAY OF PRESSING PRODUCES THE *HIGH* AND *LOFTY* OR *HARD* AND *FLAT* FINISH—THIS AT THE WILL OF THE OPERATOR

CARMENTS ARE BONE DRY AND READY TO BE PACKED IMMEDIATELY AFTER BEING PRESSED

A S K

UNITED STATES HOFFMAN CO., SYRACUSE, N. Y.

THOUSANDS

of

HESS-BRIGHT

are used on

Textile Machinery

They are oil-tight—oil won't drip on your textiles—drip pans are not needed. Hess-Bright Ball Bearings mean no hot boxes, no needless fire risk; less expense for oil, fuel, belting and labor.

Write us now if interested

The Hess-Bright Mfg. Company

Philadelphia, Pa.

NEW YORK, 1974 Broadway CHICAGO, 1800 Michigan Ave.
PHILADELPHIA, 666 North Broad Street

SMITH, DRUM & CO.

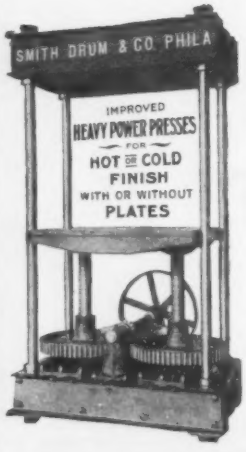
"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

HOSIERY

IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES

SAVE LABOR and DYE STUFF and do BETTER WORK
in your dye house by using



Smith, Drum & Co. Machines

Full particulars on application

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Southern Agent
H. G. MAYER
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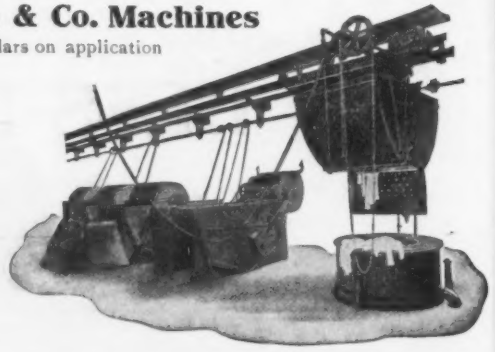
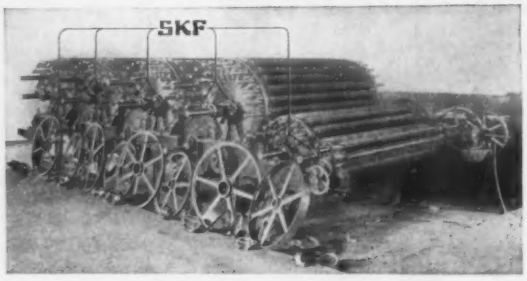




Gears and Pulleys Removed from Garnett Showing S. K. F. Ball Bearings

The Money Maker

Garnetts equipped with S. K. F. Ball Bearings are an economical proposition. Wastes can be opened at a cost that makes it a profitable proposition to textile manufacturers.

The S. K. F. Ball Bearings save 50 per cent of the power required by plain bearings.

They save in belts. A garnett plant recently reported a saving of $120.00 per month in belts alone by using S. K. F. Ball Bearings.

Increased production and clean stock add to the savings.

Specify SKF Self-Aligning Ball Bearings on

Licker-in Bearings, Breast Cylinder Bearings, Main Cylinder Bearings, Fancy Roll Bearings, Fancy Stripper Bearings

Send for Bulletin No. 14-M

SKF BALL BEARING CO.

50 CHURCH STREET, - NEW YORK

Master Standards

In the Making of Belting, Hose, Packing

GOODYEAR supremacy in the field of equipment for power plants of all kinds has been won and held through master service standards alone.

Price is never a determining factor. Other high standards are never the gauge. Every Goodyear product is designed and made to set a new master standard in its particular field.

In this way highest efficiency is attained—greatest service rendered. And **service** determines economy.

GOODYEAR AKRON, OHIO

Goodyear Methods

In the mechanical goods sales department of this Company are 21 experts whose combined experience in this one field exceeds 126 years.

Co-operating with these men are master workmen who study actual working conditions before any new Goodyear product is made.

Step by step in the process of manufacture exacting inspections and tests are made to insure the quality and service by which Goodyear products have won their way.

Confer With These Men

Costs nothing to confer with these men to learn just what Goodyear products meet your particular needs—*and why*—whether belting, hose, packing or valves. Write today, stating your needs.

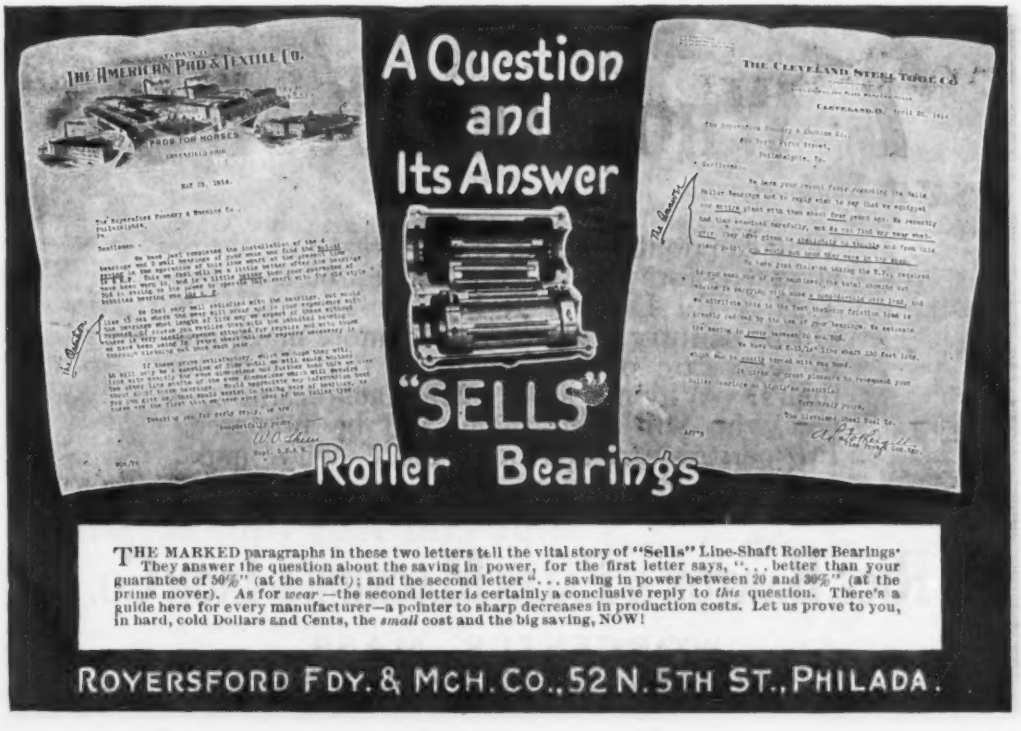
Buying this way is buying for SERVICE. And *maintained* service is what you seek in the operation of your plant. If service suffers, all suffers. And a dollar or two saved on first cost of inferior equipment multiplies itself into heavy losses when breakdowns occur.

So, write today,—NOW.

The Goodyear Tire & Rubber Company Mechanical Goods Department **Akron, Ohio**

Toronto, Canada **London, England** **Mexico City, Mexico**

Write Us on Anything You Want in Rubber 1859

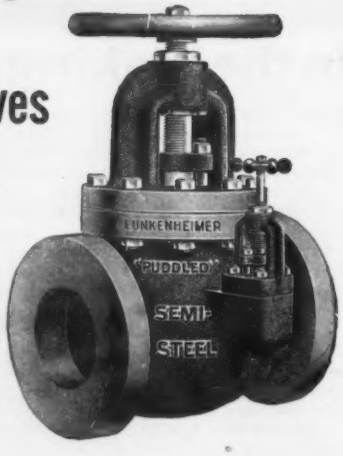


THE MARKED paragraphs in these two letters tell the vital story of "Sells" Line-Shaft Roller Bearings. They answer the question about the saving in power, for the first letter says, ". . . better than your guarantee of 50%" (at the shaft); and the second letter ". . . saving in power between 20 and 30%" (at the prime mover). As for *wear*—the second letter is certainly a conclusive reply to *this* question. There's a guide here for every manufacturer—a pointer to sharp decreases in production costs. Let us prove to you, in hard, cold Dollars and Cents, the *small* cost and the big saving, NOW!

ROYERSFORD FDY. & MCH. CO., 52 N. 5TH ST., PHILADA.

LUNKENHEIMER

"Puddled" Semi-Steel Valves



The Lunkenheimer line of "Puddled" Semi-steel Valves consists of Globe, Angle, Check, Gate, Throttle, Non-return Boiler Stop, etc., made in all standard sizes and two combinations as regards the materials used for the trimmings, in order to meet various conditions of superheat. Also made in **Cast Steel.**

All of the above, together with Lever, Pop, Safety, Relief, Blow-off, Screw Down Check Valves, etc., are furnished in Bronze or Iron Body Bronze Mounted.

The large and complete line of Lunkenheimer high grade engineering specialties also includes Water Columns, Gauges and other Boiler Mountings; Whistles and Ground Key Work in great variety; Injectors and Ejectors; Lubricators and Lubricating Devices; Oil Pumps; Oil and Grease Cups; Gasoline Engine Appliances, etc. Your local dealer can furnish them; if not, write us. A complete description of the entire line can be had by referring to Lunkenheimer No. 50 Catalogue. Write for a copy.

THE LUNKENHEIMER CO.
"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World

New York Chicago **CINCINNATI, OHIO** Boston London 14-54c

? WHO CAN DOUBT IT?

Who can doubt that an era of great prosperity is just before us? Who can doubt that the TEXTILE PRINT WORKS of this country will soon need more machines to take care of the business that is to be theirs? Why not order such machines now,—you who will need them, and be prepared? Prosperity's friends are those who make ready for her coming.

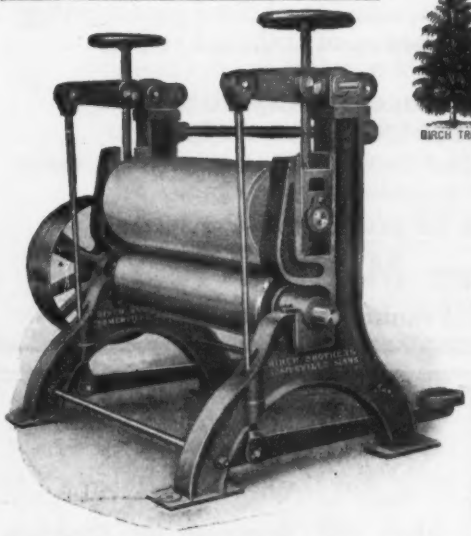
RICE, BARTON & FALES MACHINE & IRON CO.

WORCESTER, MASS.

BIRCH BROTHERS

ALBERT BIRCH, TEXTILE MECHANICIAN

SOMERVILLE, MASS.



Starch Mangle.—This is the two-roll machine, with brass and rubber rolls. Mangles built with rollers of any material or number desired. Send for circular.

BIRCH TREE.

"Coronation"

Piece-End

Sewing Machine

Sent on trial most anywhere

Sews any fabric, thick or thin, wet or dry, without change

Fine Stitch or Coarse Stitch

Send for Circular

Also Makers of

Dyeing and Finishing Machinery

Scutchers, Openers, Folders, Crabbing and Soaping Machinery

LAWSON'S

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery

For the Manufacture of

Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machines.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

RELIANCE
CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; drying **oilcloth,** or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

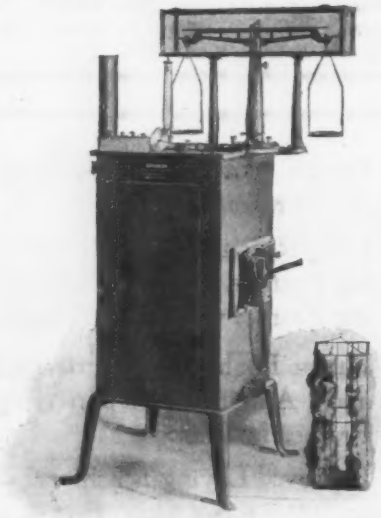
In use by the United States Quartermaster **department** for shrinking uniform cloth.

Write for catalogue and prices

Reliance Machine Works

Frankford. Phila.

A New
SINGLE BASKET
Electric Conditioning Oven



Costs Only a Few Cents per Hour

Our new oven may be used on either alternating or direct current. It is supplied with either automatic or hand regulation of temperature. It has a capacity of one test at a time.

This new oven is neat, absolutely accurate and easily operated. It is just the oven that you want if you have a limited amount of conditioning to do.

Write us for particulars

Emerson Apparatus Company

251 Causeway Street - Boston, Mass.

Thickness Gauge

For Textile Manufacturers

which will determine the thickness of textile materials within .001 inch

Operated by a standard pressure on a standard area

Spring Micrometers of this type are especially adapted for accurately measuring the thickness of yielding soft materials like cloth and other textiles

Insures accurate and uniform thickness

Reliable and easily read

SEND FOR PRICES AND DESCRIPTIVE CIRCULARS

Randall & Stickney

WALTHAM, MASS.

The BERRY WHEEL AND MILL PROFITS

Pure Air and Greater Profits Result from Proper Ventilation

Because your operatives are thereby made capable of rendering their best service to you—and with less drain on their vitality.

Let the BERRY Help the "Help" to Help You

For Drying and Ventilating Facts, Write To

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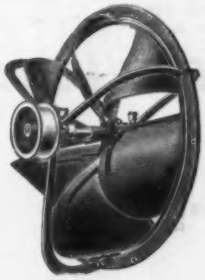
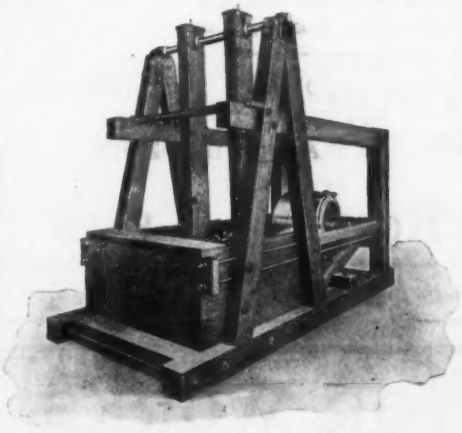


This is the
BERRY WHEEL OR FAN WITH NO BACK DRAUGHT
the most effective agent on the market for drying and for eliminating steam and other impurities from the air.

RODNEY HUNT MACHINE COMPANY



LATEST DESIGN OF
PUSHER FULLING MILL

OAK AND HARDPINE FRAME AND PLANKING : SPECIAL DOUBLE ACTING SHOCK ABSORBER : ECCENTRIC DRIVE.

HUNT
SUPERIOR QUALITY

MAIN OFFICE AND WORKS . ORANGE, MASS.
BOSTON OFFICE . 70 KILBY STREET

DYEING MACHINES Giles TRADE MARK

If You are Interested in

Machines for Dyeing or Bleaching Yarns

Cotton
Wool
Worsted
Silk
Artificial Silk
Ramie

Write us to send you an estimate of cost of installing an equipment as well as the economies in labor and steam that can be made.

John H. Giles Dyeing Machine Co.

TAUNTON, MASS.

WILLIAM FIRTH
Pres.

THE

FRANK B. COMINS
Vice-Pres. and Treas.

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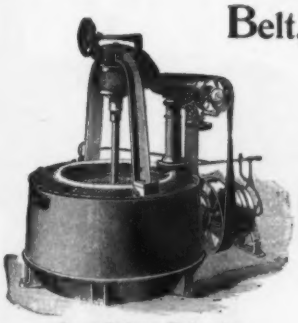

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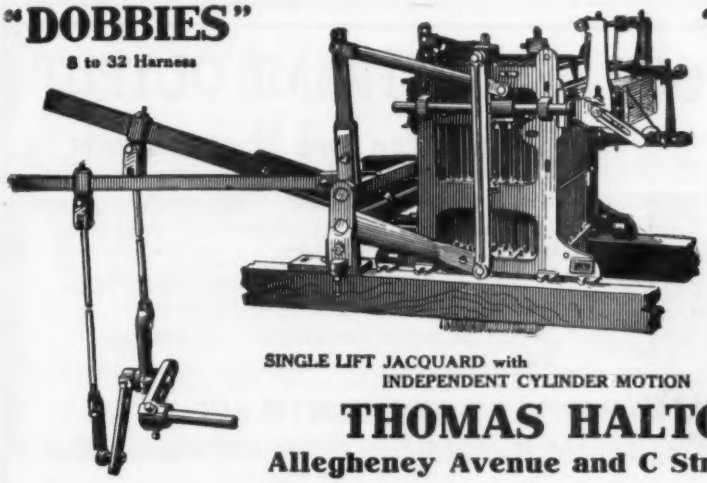

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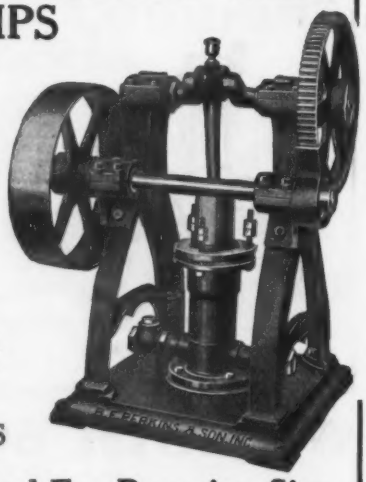

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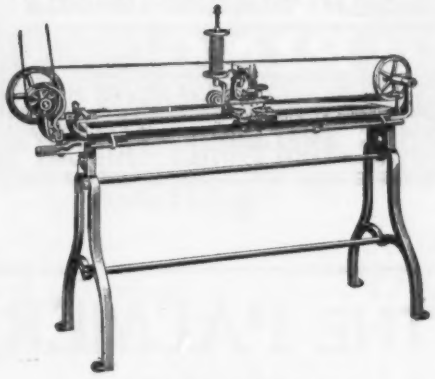

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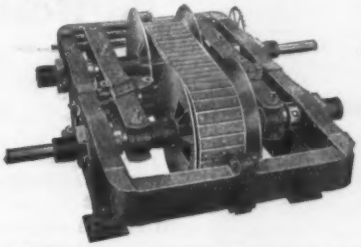

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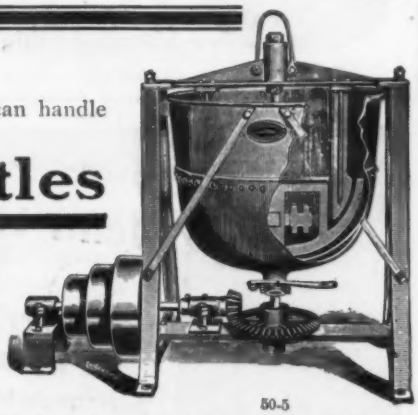

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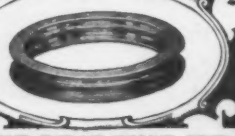

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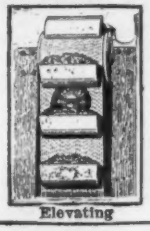

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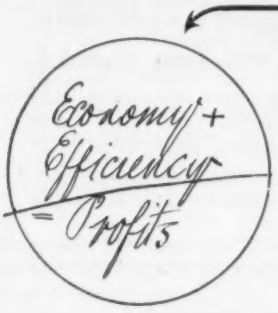

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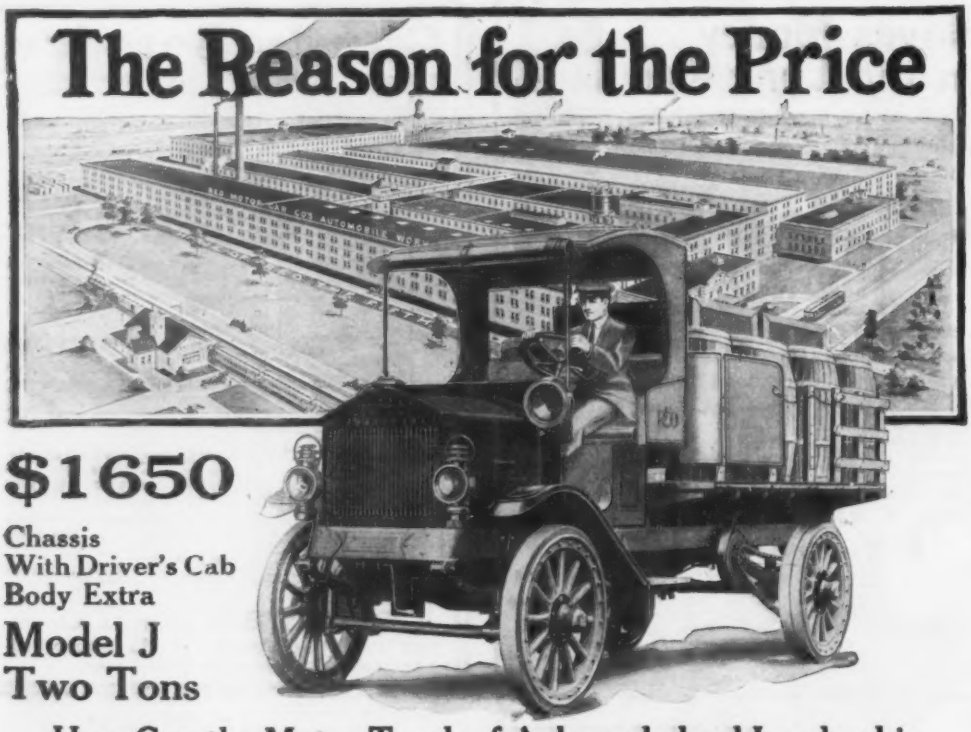

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Body Extra

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Two Tons

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TEXTILE WORLD RECORD

Published on the 12th of each month by

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A Complete Directory of Cotton, Woolen, Knitting, Silk, Flax and Jute mills of the United States and Canada, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments; about 7,000 in all. Full information is given about each mill in almost every instance, viz., the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct. All this and much other information contained in this book is arranged in a way to be instantly accessible.

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Permanent Colors Create Permanent Trade

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Indigo The introduction of synthetic Indigo by the Badische Anilin-& Soda-Fabrik in 1897 greatly lowered its cost, simplified its application and placed it on a scientific basis. The immediate practical result has been that Indigo is used on an ever increasing scale in the production of overall goods (denims) for working garments worn by artisans of all classes everywhere, as well as for navy blues with white designs, in percales, and similar fabrics which are so largely used the world over for women's house and working dresses. Nothing has yet been found which is as well suited as Indigo for these and many other purposes, since it combines minimum cost, brilliancy of color and satisfactory fastness. In fact, the word "Indigo" to the consuming public is a guarantee of a durable and satisfactory color.

Indanthrenes Unfortunately, however, Indigo produces only a Blue, while the trade requires every shade in fast and brilliant colors. To Dr. Rene Bohn, Director ot the Badische Antlin-& Soda-Fabrik, Ludwigshafen a/Rhein, should be given credit for the discovery of the series of dyestuffs derived from Anthracene, known as Indanthrene Dyes, which produce fast colors in every desired shade and tone. The introduction of these dyes in the cotton industry has created a new standard for fastness and brilliancy, in which combined respects they excel any colors heretofore known. Indanthrenes are actually permanent while the fibre lasts, meeting therefore every trade requirement, a fact so well demonstrated that today the word "Indanthrene" (pronounced In-dan-threne) is synonymous with "Fast Colors." There is probably no factor of greater importance in the manufacture of cotton goods than the fastness of the colors, in that it constitutes a most attractive selling argument, increases their popularity, and broadens the market for them.

BADISCHE COMPANY

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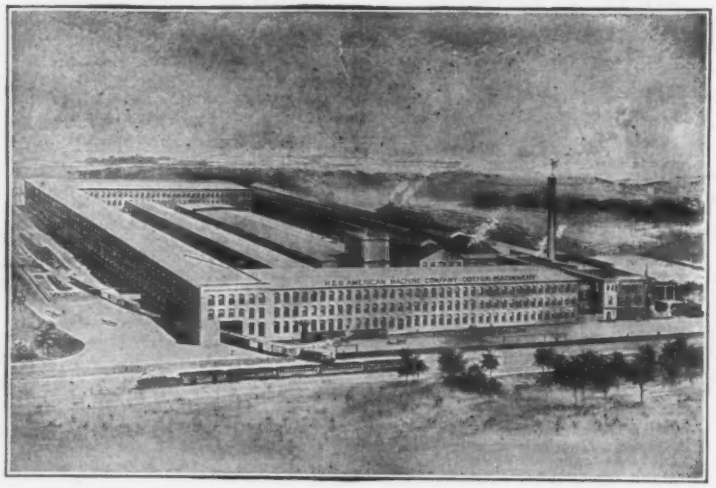
Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

COTTON MACHINERY



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TEXTILE WORLD RECORD

OCTOBER, 1914

Monthly Comment.

The Supply of Dyestuffs

September closed with the dyestuff problem apparently as far from a solution as when the supply from Germany was suddenly cut off on the first of August. A few shipments by way of Rotterdam had been received during the two months, but they represented but a small part of the quantity consumed in this country, and as a result the trade had been compelled to watch the American stock of dyestuffs steadily shrink as the war continued.

In response to urgent appeals for help, not only from the textile mills, but from many other trades, the State Department took the matter up with the German government, with the only result of exposing new obstacles to the shipment of German dyestuffs to the United States. Finally a conference between Washington officials and representatives of various interests affected by the embargo was held at Washington on September 30. Secretary Bryan promised that the State Department would do all it possibly could to secure a supply of dyestuffs, chemicals and medicinal preparations from Germany. Mr. Rose of the Department gave the following account of the negotiations with the German Government:

On September 16 we received a telegram from the embassy in Berlin announcing that these products would go out; that Germany did not prohibit them, or, rather, the prohibition had been raised. At that time I sent out this information to those interested who had made inquiries. On September 22 we received a telegram to the effect that these products, not including the sugar beet seed, would not be allowed to go out by Germany unless there was a guarantee that they would not be exported again and that they must go out in American bottoms. I thereupon realized that there might be some difficulty in getting American bottoms, and I informed those who had written our office to get a conference to consider ways and means of getting these products out. We have had since then several telegrams from Berlin, but they all end with the one idea that if you want to get these products out of Germany and into the United States, send an American ship. One telegram also suggested that the ship might take a cargo of cotton and copper, which, of course, is but a suggestion on the part of Ambassador Gerard, and it seems that the proposition now is if we want to get goods out, we must get American bottoms.

Secretary Redfield said:

As I understand it, he went on, the proposition is if the German government as to exporting, is willing that these things shall go out from Holland if shipped in American bottoms from Rotterdam. That is the whole question. They are willing to relax in our favor to that extent, and now it is how to get that done. As to the suggestion of shipping copper to Holland, that is a matter which we do not feel, I will not say do not feel interested in, but that we cannot take under the official care of the government. Whoever arranges for the American bottom and can ship outward in it, so much the better for them. It seems to me that this must be shipped, if with safety, to Holland without the ultimate destination being Germany, otherwise, if I am correctly informed, copper is contraband of war, and if found in an American bottom it will be seized. It is this question of transportation that our conference has to do with, and as to whether you can arrange among you, or any known source, for an American ship to go to Rotterdam and bring supplies.

Congressman Herman A. Metz said:

Exporters in Germany have received letters and orders, and have booked orders and only awaited the arrival of an American ship to send them across. They are ready to do this, and, in my opinion, the shipments to America will not be interfered with if in neutral boats. Germany has learned that certain goods have been reexported to England through Canada. While I do not believe this to be true, I do not blame Germany for its action in limiting the size of shipments to the United States to actual necessities. I know American boats are obtainable, that there is one in New York city, ready to go across at once, which will bring back dyestuffs, but not intermediate products, for on these there is an embargo. I recommend that a ship be sent to Rotterdam in ballast, and loaded with from 500 to 5,000 tons; 1,500 tons per month would keep American industries going in all colors. This would result merely in an increase in transportation charges, a small matter, in view of the present difficulties.

Congressman William S. Green, of Fall River, attended the conference as the representative of the Fall River Chamber of Commerce, the American Printing Co., the Algonquin Printing Co., and Borden & Remington, all of Fall River. He said these firms were very much interested in obtaining a supply of dyestuffs.

Congressman Seldomridge, of Colorado, stated that the mines and mills of his State were in a serious condition owing to the lack of cyanide and that the works would have to be closed unless a supply was obtained very soon.

John Bancroft, of the National Association of Finishers of Cotton Fabrics, Wilmington, Del., asked whether shipments could not be made by way of Italian ports and was informed that the use of those routes would involve a large increase in the cost of transportation.

Following is a list of those present at the conference:

Secretaries Bryan and Redfield, of the departments of State and Commerce; Assistant Secretary Carl Schurz Vrooman, of the Department of Agriculture; Mr. Rose, Mr. Johnson and Judge Fleming, of the Department of State; Senator William Hughes and Representative Dow H. Drugger, of Passaic, N. J.; Representatives Herman A. Metz, of New York, and William S. Greene, of Fall River, Mass.; John J. Macfarlane, librarian and statistician, Philadelphia Commercial Museum; A. J. Smith, McKee Glass Co., Jeannette, Pa.; John Walton, Jr., Eureka Silk Dyeing Co., Paterson, N. J.; Baptiste J. Lanza, Lanza Silk Dyeing Co., Paterson, N. J., president of the Silk Dyers Protective and Mutual Association; John Bancroft, National Association of Finishers of Cotton Fabrics, Wilmington, Del.; John F. Queeny, president Monsanto Chemical Works, St. Louis; John P. Hudson, president Wagaraw Silk Dyeing Co., Paterson, N. J.; F. J. McDonough, of McKesson & Robbins, New York; Frank Maas and W. I. Lewis, National Silk Dyeing Co., Paterson, N. J.; C. DeGrado, Paterson, N. J.; F. S. Bright, Badische Aniline Co., Washington, D. C.; C. S. Sinb, of Marden, Orth & Hastings Co.; Edward Bodiner, Jr., secretary Silk Operatives Mutual Protective Association; A. J. Smith, Paul Mausolff, New York; C. S. Speiden, of Innes, Speiden & Co., New York; W. L. Petrikin, Denver, Col.; H. A. Austin, Washington, D. C.; W. F. Garcelon, of Boston, chairman of the dyestuffs committee of the Boston Chamber of Commerce and representative of the Arkwright Club of that city; A. C. Klipstein, of A. C. Klipstein & Co., New York; Sr. N. S. Mirbelauer, Royal Piece Dyeing Co.; George W. Cole, Jr., Standard Suit Dyeing Co.; Walter R. Hudson, attorney for the Silk Dyers Mutual Protective Association of America, and others.

On October 2, two days after the conference adjourned, Congressman Herman A. Metz, of the Farbwerke-Hoechst Co., took the bull by the horns and chartered the 5,000-ton steamship Matanzas to sail under the American flag on October 7 from New York for Rotterdam, and return with a cargo of German dyestuffs, chemicals and medicinal preparations. The Matanzas, which is a 12-knot vessel, sails for Rotterdam in ballast in order to avoid seizure by British and French men-of-war because of contraband cargo. It is expected she will leave Rotterdam on her return trip about October 21 and reach New York with her precious load on November 1. We are informed by the Farbwerke-Hoechst Co. that the German government has agreed to allow the goods to be transported from points in Germany to Rotterdam. They also state that all American importers of German dyestuffs and chemicals can use the Matanzas for the transportation of their goods to New York. Congressman Metz deserves great credit for the energy and executive ability he has exhibited in meeting the serious shortage of dyestuffs. And he also deserves credit for the liberal spirit he has displayed in placing the Matanzas at the disposal of the trade of the entire country instead of keeping it for the use of the firm in which he is interested.

The voyage of the Matanzas to Rotterdam

will be a most striking object lesson of the need of freeing the United States from its dependence on foreign sources of supply for necessities which by the exercise of patience, intelligence, enterprise and an enlightened public policy can be produced on American soil.

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Imports of Wool, Tops and Yarn

For years the imports of wool and wool goods into the United States have been reported under the following heads: raw wool, carpets, wearing apparel, cloths, dress goods and all other. Partly manufactured products such as tops and yarn were included under the head "all other". This arrangement caused no confusion under the old tariff because the imports of tops and yarn were practically non-existent. The Underwood rates of 8 per cent. on tops and 18 per cent. on wool yarn made it commercially possible to import these products, as well as carpets, cloths and dress goods, and as a result the defect in the arrangement of import statistics became at once apparent. The lack of information regarding the quantity of tops and yarn imported was the more keenly felt because it was around these partly manufactured products of wool that a particularly animated discussion developed during the last agitation for the revision of the tariff. As soon as the matter was called to his attention, A. H. Baldwin, chief of the Bureau of Foreign and Domestic Commerce took immediate steps to place the desired information before the trade. Owing to the fact that the statistical forms for the coming year were already in use it was not practicable to include in the regular report separate statements of tops and yarn imported. The information as to tops and yarns is, however, being given in special monthly reports. The figures for July are as follows:

Clothing and combing wool, free ..... lbs.	13,680,588	$3,692,081
Carpet wool, free	6,150,565	1,028,569
	19,831,153	$4,720,650
Mohair, 15 per cent.	309,250	$101,930
Wool tops, 8 per cent. ...	1,064,988	578,152
Wool yarn, 18 per cent. ..	755,956	544,974

The war in Europe which began on August 1 brought this import trade nearly to a complete standstill. Seven weeks after the war began we learned that shipments of worsted yarn from Bradford to American weavers had been resumed.

The imports during August were as follows:

Clothing and combing wool, free ..... lbs.	11,790,980	$3,089,974
Carpet wool, free	4,777,641	769,841
	16,568,621	$3,859,815
Mohair, 15 per cent.	238,490	$93,848
Wool tops, 8 per cent. ...	369,230	191,774
Wool yarn, 18 per cent. ..	307,825	223,713

The European war broke out on August 1, and the decrease in imports of wool, tops and yarn in August was due to the interruption of ocean transportation and international exchange.

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"Pure Textiles" in Utah

The Utah Agricultural College, Logan, Utah, has recently issued a pamphlet entitled "Pure Textiles and Clothing," which is an excellent illustration of how the public is misled regarding textile goods. This pamphlet, which is offered as "a preliminary study of wool, silk and linen fabrics on the Utah markets," is issued in order to call attention to the work of the College in the analysis of textiles and detection of their adulteration. It begins with the customary reference to the value of the pure food and drug act and the work of Dr. Wiley in exposing the adulteration of drugs and foodstuffs. While this endorsement of the pure food and drug law is probably deserved, the mistake the Utah College makes is in connecting it with legislation regarding textiles in such a way as to lead the uninformed reader to conclude that what has been done in the case of foodstuffs and drugs can be done in exactly the same way and as easily in the case of textiles. The fact is that textile materials differ so widely from foods and drugs as to make a "pure textile" law modeled after the pure food and drug act, utterly impracticable. Having found the Utah College Bulletin beginning with this fallacy, it is not surprising to find it filled with the mistakes that "pure textile" enthusiasts have

been spreading for nearly twenty years. Referring to wool and cotton mixtures the Utah bulletin says:

> Cotton can be so treated in the process of manufacture that it resembles wool in texture and by the use of a little wool in the weave it responds perfectly to the burning test for wool.

The statement that cotton can be so treated as to resemble wool in textiles has the same element of truth as the claim that wool can be treated to resemble cotton; silk to resemble wool; wool to resemble silk; linen to resemble jute; jute to resemble linen. They are all spun into yarn and woven or knit into fabrics, in which forms they of course resemble each other to a certain degree, but the inference in the Utah College claim that by some special treatment the cotton fiber can be made to resemble the wool fiber in structure is wholly unfounded. The statement regarding the burning test for wool is equally misleading. A considerable percentage of wool must be mixed with cotton before the burning test will disclose the presence of wool. Moreover a very simple test will show the proportion of cotton in any mixture of wool and cotton, so that no one buying cloth need be deceived.

Further on this is found in the pamphlet:

> Like silk, the wool fiber is capable of absorbing and mechanically holding large quantities of inorganic salts and these salts give weight and firmness to the fabric. They are, however, of no permanent value, for they add nothing to the wearing quality of the cloth and often wash out the first time the piece is placed in water.

The weighting of wool goods is so rare that to all intents and purposes it is not practiced at all. Even in England where the manufacture of low grade wool goods has reached its highest (or rather lowest) development, the weighting of wool goods has been abandoned because the resulting loss far exceeds the possible profits. Under ordinary atmospheric conditions prevailing in wool manufacturing districts wool absorbs moisture varying from 15 to 20 per cent. of its dry weight. This natural and unavoidable weighting is all that the Utah College professors or anyone else can find in wool goods. Evidence confirming this is found in the Utah pamphlet itself, which gives the results of the analysis of eighty-one fabrics found in the Utah market, thirty-five of which contain wool. The proportions of wool and cotton in each of these thirty-five fabrics are given separately, while the percentage of the remaining weight is given in a column headed "moisture and weighting, filling or sizing." Not one of these samples show more than 17.42 per cent. due to material other than the fiber itself; one shows only 5.37 per cent.; while the average for the thirty-five is only 10.31 per cent. Utah has a dry climate and this may account for these low percentages, which are considerably below the ordinary moisture regain for wool. If the Utah College analysts had made any adequate study of the subject they presumed to discuss, they would have understood that the weight (10.31 per cent.) of the samples in addition to the fiber itself is far below the amount of water found in wool under ordinary atmospheric conditions. Instead of making that preliminary study they have classified these low percentages of moisture so as to convey the false impression that they include, not only natural moisture, but also artificial and fraudulent weighting of the goods. We assume their good faith, but the effect on the minds of the uninformed is the same as if they had deliberately planned to deceive. In another part of the Utah bulletin this appears:

> Samples of men's clothing secured from sample books in clothing stores revealed the fact that goods marked all wool and selling for as much as $5.00 a yard were made of regenerated fiber, that is, fibers that had been secured from clothing previously worn out and in many cases contained besides wool a considerable quantity of cotton, hemp and jute.

Shoddy, which the Utah College calls regenerated wool, cannot be distinguished from new wool when both are made into goods. It follows that the statement just quoted is based on the guesswork of the Utah analysts. They pulled some samples from books in clothing stores, examined the fibers and guessed that the material had been used before in the manufacture of other goods, for they had no means of determining whether the raw material of the fabric was new wool or shoddy. The price mentioned, $5.00 a yard, makes the Utah state-

ment either ridiculous or a reflection on the ability and fairness of Utah clothiers who supplied the samples.

After telling us of goods made of shoddy and sold at $5.00 a yard the Utah College bulletin gives this advice to judge of wool goods by the price:

> A word of warning should be given here against the purchase of very cheap all wool garments. Cloth containing wool only can be bought for 35 cents a yard, but an all wool fabric at that price will never give the same service that a cotton-wool mixture of the same weight and price would give. Short, coarse, wool fibers, regenerated wool, and shoddy are made up to meet the popular demand for an all wool cloth at a low price. A good substantial piece of cloth made of fine long fibers, closely woven and unadulterated cannot be retailed for 35 cents a yard. If all wool is wanted it is often a matter of good economy to pay $1.50 or more a yard for a serviceable dress.

In another part of the bulletin there is an illustration of a cloth said to weigh 1 1/2 ozs. per yard, 36 in. wide and to have been sold for "all wool" at $1.50 per yard. When boiled in caustic potash the warp was found to be all cotton. Manufacturers, even if so disposed, cannot sell cotton warp goods as "all wool," because those who buy from the mills would be certain to discover the fraud. The only place where such a fraud can be practiced is at retail on the comparatively few consumers who know little or nothing about textile goods. If, as the Utah College charges, cotton warp fabrics are retailed in Utah as "all wool," the Utah retailers are guilty of the fraud. Nevertheless the Utah College places the blame for the cheat on the manufacturer and acquits the dealer:

> The retail dealer is not to be blamed for making the same claims for his goods as were made to him by the manufacturer and, therefore, our protest is not directed against the dealer.

The grotesque collection of errors, half-truths, vague statements and unwarranted assumptions, which fill the pamphlet has this appropriate conclusion:

> Congressman Lindquist has introduced a bill (H. R. 10080) which provides that it shall be unlawful to misrepresent in manufacturing, selling, or trading any fabric or article made in whole or in part of wool, silk, cotton, linen or leather. The bill provides that the manufacturer shall properly label every bolt of cloth that leaves his mill; that the label shall give the percentage of each kind of fiber in the fabric. Failure to do this or any misrepresentation on the label is made a criminal act. The people should demand this protection. The Lindquist Bill should become a law. . . . For the protection of 90,000,000 consumers we believe that every bolt of cloth should be labeled with a true statement of its composition.

When educational institutions with the prestige that accompanies the name "college" and a faculty wearing an imposing array of degrees, publishes the mass of errors and half truths found in this bulletin of the Utah Agricultural College it is not surprising that the public is misled into giving its support to such a half-baked absurdity as the Lindquist bill.

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Determining the Weight of Cloth

For many years there has been a variation in the practice at the Boston and New York custom houses in determining the weight of textile fabrics for appraisal. At Boston one or more pieces or bolts of cloth have been weighed, while at New York the weight per yard or number of square yards per pound has been calculated from the weight of 4 square inches of the cloth. It is obvious to anyone familiar with the construction of textiles that owing to unavoidable irregularities the weight of a whole piece of 40 or 50 yards of cloth cannot be determined exactly from the weight of 16 square inches or even from a much larger sample, say a square yard or more. Usually the weight of a small sample of cloth indicates very closely the average weight of the goods in the piece. Where the exact weight of goods in the piece is to be determined, for example in appraisal for customs duties, it is necessary to weigh a larger quantity, say a whole piece. Even then the variations in the fabric from piece to piece may be such that the average weight per yard of all the goods covered by an invoice will be different from the weight per yard indicated by the weight of the single piece. The weight of a piece of cloth will, however, ordinarily indicate closely the average weight of the same goods from piece to piece. The superiority of the Boston method over that prevailing at New York has recently received a practical illustration in the protest of the Belfast Linen Handkerchief Co., Ltd., of New York, against a duty of 50 per cent. levied on

flax goods imported at New York under the Payne bill. The importers claimed the goods weighed less than 4 1/2 ounces per square yard, contained between 60 and 120 threads per square inch and should have been subject to a duty of 30 per cent. The Board of General Appraisers sustained the protest in a decision from which the following is taken:

This protest was decided by this board on Dec. 19, 1913. Within 30 days thereafter the assistant attorney general filed an application for rehearing, which application was granted and additional testimony was subsequently taken in the case. At the original hearing the importer testified that he weighed a 57 3/4 yard piece and a ten yard piece of the goods out of the shipment and found that each averaged less than 4 1/2 ounces per square yard. He further testified that subsequent shipments of the same quality have been found to weigh less than 4 1/2 ounces per square yard. No witnesses testified on the part of the Government and, on the record, the Board found that the goods weighed less than 4 1/2 ounces per square yard. On the rehearing the assistant attorney general introduced the testimony of the examiner who passed the goods. He described his method of examination by stating that he weighed four square inches of the cloth out of one of the pieces in the shipmnet, and, from such examination, determined that the cloth weighed over 4 1/2 ounces per square yard. He could not testify that he had weighed a whole piece of the goods or that he had tested more than one piece, and he admitted that the weight of cloth sometimes varies at different points in the piece.

We think the importer has established his claim by a clear preponderance of evidence. On the record we find that the goods weigh less than 4 1/2 ounces per square yard and contain between 60 and 120 threads per square inch, and we hold that they are properly dutiable at 30 per cent. advalorem under paragraph 357.

The protest is sustained.

Work in Woolen and Worsted Mills

The National Associatoin of Wool Manufacturers has issued the following report of active and idle machinery in woolen and worsted mills on Sept. 1:

Per Cent. of Idle Machinery to Total Reported

	Reported	Sep. 1	Jne. 1	Mar. 2	Dec. 1
Looms, above 50"	34,216	26.	24.6	24.8	24.9
Looms, 50" or less	8,194	17.3	25.	17.7	27.2
Looms, carpet	2,323	38.3	28.3	24.5	32.1
Woolen cards, sets	2,939	22.8	19.4	19.5	21.4
Worsted combs ...	1,327	21.	15.5	13.	23.1
Woolen spindles ..	904,032	22.5	25.8	22.2	22.7
Worsted spindles ..	1,291,668	16.9	18.1	22.	26.

The Cotton Supply

The paper on the cotton supply by Arno Schmidt, Secretary of the International Cotton Federation, has been made in large part inapplicable to present conditions by reason of the war in Europe. Mr. Schmidt when writing his paper was disturbed by the prospect that cotton mills would continue to run on short time because of the scarcity of cotton. The war, however, has changed the situation so completely that now, the growers of cotton are unable to find a market for their product. Nevertheless the paper has a prospective interest because of the temporary character of the present situation. Mr. Schmidt says:

The cotton industry of the wool has, during the last ten years, been suffering from a scarcity of raw material. This scarcity has frequently been so pronounced that mills in all parts of the world have been obliged to curtail production at one time or other. . . .

The primary cause of short-time working undoubtedly arises from the fear that the world's yearly supply of cotton will not be sufficient to meet the yearly demand.

There has at times unquestionably been a scarcity of cotton, but it by no means follows that short time in the mills has been caused primarily by a shortage of cotton. Other important factors are involved, among them the overstimulation of manufacturing. Mr. Schmidt's failure to take the overextension of mill-building into account is the more surprising because this evil has been so pronounced in Lancashire as to call for severe condemnation by officials of his Association, who have suggested that it be made the subject of legal regulation.

Another mistake made by Mr. Schmidt is in his assumption that the problem is to increase the cotton supply so that the price will suit the supposed purchasing power of poverty stricken and semi-civilized races. He says:

It must be remembered that by far the vast majority of the people in the world, the poorest, who have no choice but to use cotton clothing, have only a very small fixed amount per annum to expend on clothing, and it makes a great difference to them, in the quantity of clothing they can afford to buy, whether cotton is 6d. or 8d. per pound.

The price of cotton should not and cannot be limited to the lowest purchasing power of the denizens of Asia and Africa. Mr. Schmidt further on supplies the evidence to expose his own fallacy when he says:

> Consideration must also be given to the fact that cotton has entered into many new uses in Europe. It is in great demand for the making of motor-car tire covers, bagging, ropes, aeroplane cloth, etc., and, as a result of the discovery of the mercerizing process in the manufacture of certain classes of goods, cotton has replaced silk to a considerable extent. As soon as the fashionable ladies of Europe revert from the "hobble" skirt to the fuller skirt—and fashion seems to be developing in this direction—large additional supplies of cotton will be wanted.

The price of raw cotton, subject of course to the variations due to differences in grade, is the same for Europe as for Asia or Africa. The plan to squeeze the price of cotton down so that European mills can sell their goods in Asia and Africa is not calculated to arouse any great enthusiasm among the growers of cotton, even when taken by itself. It becomes even more forbidding, however, when we consider that making the price of cotton fit the low purchasing power of the people in Africa and Asia would also reduce the cost of cotton for motor-car tire covers, aeroplane cloth and stylish dress fabrics in Europe and elsewhere. Moreover, Mr. Schmidt proposes a price adjustment for raw cotton which the members of his Association do not accept for cotton goods. When selling cotton goods, whether to Europe, Asia or Africa, the manufacturers and merchants of Europe sell for the highest price attainable and without concerning themselves directly with the necessities of the ultimate consumer. That is sound business, not only for cotton goods, but for raw cotton. Mr. Schmidt refers seriously to what has long been a joke in the cotton trade, namely, the estimate as to how many million bales of cotton would be used if the people now naked were clothed and if those now wearing clothing would wear more. Such speculations and the attempt to depress the price of cotton so that the world will use more of it are beside the mark. Not only is the price of cotton regulated by supply and demand, but it also reacts and serves to maintain a proper balance between production and consumption. If the price falls the production will tend automatically to decrease. If the price rises the supply will increase and such irregularities as overproduction of goods due to the overextension of mill building will be automatically checked. The prosperity and stability of cotton manufacturing are best promoted by avoiding arbitrary schemes to control the supply, demand and prices. Mr. Schmidt himself gives an illustration of this truth in the following passage with which he closes his paper:

> Lancashire's secondary advantage is that by extending cotton cultivation in India by improved methods, especially by seed selection, the ryot becomes financially better off, the consequence being that he is able to spend more money on his clothing, of which about 90 per cent. is supplied by Lancashire.

The International Cotton Federation is doing excellent work in the compilation of cotton statistics and the occasional unification of the sentiment in favor of necessary short-time in the mills. The fixing of prices for raw cotton and the regulation of the amount of clothing worn throughout the world are matters beyond the scope of its activities and which can safely be left to adjust themselves.

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NAME FOR ARTIFICIAL SILK

John T. Slack Corporation

Springfield, Vt., Aug. 14, 1914.

Editor Textile World Record:

Dear Sir: Referring to your recent correspondence on a name for "Artificial Silk," allow me to suggest the word "Celk". The first two letters of this word indicate its origin, as being a product of cellulose, and the last two, as anybody can see, are half silk.

Yours truly,

Wm. H. Butler.

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The number of sheep in the Australian Commonwealth is now calculated to be 85,000,000 head. If to these be added the New Zealand figures of 24,000,000, the grand total is 109,000,000, which is, roughly, about two million more than the totals of a year ago.

American Trade with Belligerent Europe

During the year ending June 30, 1913, the European goods of all kinds exported from the United States to the seven European countries now at war, were valued at $1,190,481,041, the imports to the same countries for the same period amounting to $710,192,512. The imports of textile materials were valued at $146,762,000, nearly all manufactured goods, and the textile exports were valued at $467,733,000, nearly all of which was raw cotton. The following table shows this foreign trade classified according to countries and kind of goods, the Servian trade which amounted to only $702,009 non-textile materials being omitted:

THE WOOL GOODS MARKET

New York, Oct. 1, 1914.

The war of the nations has brought a complete change in the wool goods market, the question of foreign competition having been practically eliminated.

The only foreign woolen and worsted goods being sold here, to any extent, are of British manufacture. The business being booked on those is so limited that they are not a disturbing factor in the market.

The foreign woolen manufacturing business will certainly be greatly curtailed for a long time to come, as the war has given it a severe setback.

Agents are offering samples of spring

IMPORTS FROM
(000 omitted)

	United Kingdom	Germany	France	Belgium	Austria	Russia
Cotton, raw	1,894	..	..	..	..	..
Cotton Cloth	4,865	412	1,785	321	57	..
Laces	7,293	7,559	7,998	..	301	..
Knit goods	..	..	96	..	..	..
Other cotton goods	2,251	2,376	866	144	243	..
Waste or flocks	756	874	..	..	..	..
Wearing apparel	240	6,069	..	..	..	..
Plushes, velvets	1,534	..	..	..	..	..
Cotton thread	3,708	..	..	..	..	..
Fibers, raw	2,899	2,387	20	926	58	1,175
Bags of jute	973	..	..	..	..	..
Burlaps	6,443	..	..	..	..	..
Handkerchiefs	1,845	..	..	..	..	..
Yarn, fibre	1,239	..	..	..	..	..
"Linens"	16,562	2,168	1,219	1,991	391	50
Laces of fiber	374	938	589	..	..	..
Other manufactures	2,505	506	649	390	490	..
Silk, raw	..	..	599	..	..	.
Silk goods	1,959	2,746	14,927	234	82	.
Silk, artificial	926	1,165	..	..	..	.
Other silk goods	180	610	..	..	..	..
Wool, raw	13,854	257	707	141	131	2,664
Wool cloths	2,839	941	..	..	..	..
Carpets and carpetings	494	..	..	..	..	3
Other wool goods	2,073	433	378	..	..	..
Total Textiles	77,706	29,431	29,833	4,147	1,753	3,892
Non-Textiles	217,859	159,532	107,044	37,794	17,439	23,066
Total imports	295,565	188,963	136,877	41,941	19,192	26,958
	EXPORTS TO					
Cotton, raw	224,783	144,175	64,137	13,079	6,942	4,524
Cotton goods	506	..	178	532	12	..
Cotton waste	..	1,003	..	..	..	2,007
Other cotton goods	..	301	..	..	..	2,256
Fibers, raw	1,338	131	751	221	..	857
Total Textiles	226,627	145,610	65,066	13,832	6,954	9,644
Non-Textiles	370,522	186,074	81,034	53,023	16,366	15,719
Total exports	597,149	331,684	146,100	66,855	23,320	25,363

goods from British manufacturers and orders are being placed from buyers having sufficient confidence in the ability of such mills to make deliveries according to contract at times of placing the orders.

Our manufacturers are undoubtedly being greatly benefited by the elimination of foreign competition. The many advances in prices have placed them on a profit earning basis, which has not been experienced by the average manufacturer during the past season.

The question of supplies of dyestuffs is far more threatening than the competition on fabrics. Practically all dyestuffs come from Germany and although shipments are coming in they are in limited quantities and most of the shipments received during September were out of Germany before the war fairly began. Apparently efforts are being made on the part of German manufacturers to keep up exports of their dyestuffs by way of Holland. If they prove successful, it will greatly relieve the present situation.

It has been learned that a large business has been done for the coming spring season on low grade serges for men's wear, made in English mills. They were sold to some extent last season and gave satisfaction to the trade while other and similar makes were exceedingly unsatisfactory and have been eliminated this season. The selling agents of the successful lines report that large shipments of the goods are being received regularly once or twice a week. Another agent reports a liberal business done on English fancy worsted suitings with prompt shipments being constantly received. There are other foreign lines being sold to some extent, but not so liberally as to excite comment. There are a few foreign fabrics which cannot be duplicated here and they are securing considerable business.

Woolen mills generally in this country are well sold on initial orders with the best of prospects for selling up to their full capacity for the season. Many mills already have their entire season's business booked, with orders still coming in. There are exceptions, caused by one or more of several conditions. Some mills not properly organized nor up to date in all particulars, have found it impossible to make goods at prices to compete with the better equipped mills. There have been some failures on account of fabrics and styles not proving successful, a situation which usually develops with some mills each season.

Domestic manufacturers of the finest goods for the jobbing and merchant tailoring trade are reaping the benefit of the practical elimination of Continental competition. There are some goods of this kind coming from England, but not in sufficient quantities to cause serious competition. The result is that our fine goods manufacturers are having an unusually free sale for their fabrics, covering their usual sales as well as the business that has usually gone abroad. The introduction of domestic fabrics to consumers that have always worn foreign made fabrics will undoubtedly result in many of them becoming permanently wearers of home made goods, as they surely will prove fully as satisfactory.

Tailors to the trade have placed their orders for suitings, trouserings and overcoatings in very satisfactory quantities, their orders are on such a basis as to indicate confidence in their usual and probably increased business. With the placing of these orders, the initial order business on men's wear fabrics may be considered practically closed for the season.

September developed a liberal demand for heavy overcoatings, during which time large purchases were made at the advanced prices. The unusually warm weather later in the month had an adverse effect, causing the demand to slacken considerably. The sale has largely been for mixtures and solid colors, with a good demand for balmacaan effects.

The demand for all kinds of stock woolen and worsted goods has developed to large proportions for fabrics and styles having any merit to recommend them. They are being sold at good prices, with the prospect of the mills carrying smaller stocks of piece goods than have been held for many years.

During the last two weeks a large export demand has developed for blankets. It is estimated that several hundred thousand blankets have been sold for export. They

are presumed to be principally for army purposes. Speculators have taken advantage of the situation and have made large purchases of blankets, which are being held for advances in prices. Large contracts are being offered for deliveries within sixty days. Blanket mills generally are well sold ahead for several months, consequently most of them are not in a position to accept contracts for delivery in so short a time.

Dress goods selling agents report that their various fabrics were placed on the market during the last half of September. An active demand promptly developed and continues at the present time. The elimination of nearly all foreign competition has benefited the trade to a great extent as buyers have been obliged to place practically all their purchases for domestic goods, whereas they formerly have been making large purchases of foreign goods. There are a few foreign fabrics which cannot be duplicated here to good advantage. Some orders are being placed for these goods.

Many mills are running full time with excellent prospects for the entire season. Some prominent mills report the largest sales they have had for years. several instances are reported where fabrics have sold so freely that it became necessary to cut down sales already on the books in order that regular patrons, making their purchases late, could secure their regular requirements on such lines. The three fabrics in greatest demand seem to be poplins, serges and gabardines, all of which have secured unusually large orders. As dress goods opened later than usual, and after the war was a certainty, the manufacturers took advantage of the situation and made their prices on a profit paying basis, consequently they are assured of a profitable business. Corporations making principally narrow width dress goods opened their lines before the war cloud appeared and they made unnecessarily low prices, at which they did a liberal business. As conditions developed it was evident that every yard could have been sold at higher figures. Prices were advanced several times and their sales have been large at the advanced prices.

HOSIERY AND A DYESTUFF FAMINE

The National Association of Hosiery Manufacturers has sent the following letter to the trade:

Philadelphia, Pa., Sept. 5, 1914.

At a meeting held at the Manufacturers' Club, Philadelphia, Wednesday, September 2nd, by the Officers, Board of Directors and Advisory Board of the National Association of Hosiery and Underwear Manufacturers, at which meeting representatives from the dyestuff importers and domestic manufacturers of dyers were present, it was found that no immediate relief could be expected in the dyestuff situation, and domestic dyestuff manufacturers showed it would take at least a year to start any plants for their manufacture, and only at an outlay of immense capital and for some time even then only a limited class of colors could be produced. Furthermore, it is problematical if any dyestuff can be imported during the progress of the European War, or for a considerable time after its termination, and in any event prices will be advanced enormously, it was therefore

Resolved, That it is the opinion of this meeting that the hosiery manufacturers should take no orders for dyed hosiery for delivery beyond January 1st, or beyond such time as the stock of dyestuffs of the individual manufacturers will last. Furthermore our customers be advised of these conditions and they are recommended not to commit themselves to deliver any dyed hosiery which is not in their possession on or before January 1st.

Furthermore, the Members of this Association are advised not to accept any orders except under the following conditions:

"This order is taken subject to delay in delivery, and also to a reduction of quantity if the product of the mill is curtailed by inability through war or embargo to secure necessary materials and supplies."

Consequently, owing to these conditions existing, it seems that bleached white or undyed hosiery will, of necessity, be the prevailing color for all hosiery for next spring and summer.

THE SOUTHERN TEXTILE ASSOCIATION

The annual convention of this association will be held at Birmingham, Ala., on November 13-14. The morning session on the 13th will be devoted to business. In the afternoon there will be a trip to Fairfield and Ensley, when the visitors will have an opportunity of studying the housing conditions of a model mill town. After the business session in the forenoon of the 14th, there will be a trip through the residential portions of Birmingham. The committee having charge of the arrangements for the convention is made up as follows: W. B. Everett, Scott Maxwell, J. S. Palmer, D. J. McCaughlin, F. E. Heymer, Alonzo Iler, C. W. Thrash, A. E. Escott, J. D. Greer.

The National Association of Cotton Manufacturers

A number of things combined to make the Lenox meeting one of the most interesting in the history of the National Association of Cotton Manufacturers. First was the business disorder brought about by the war in Europe, which has interrupted transportation and exchange throughout the world, and involved the cotton trade in a dense fog of uncertainty as to the immediate future. The change of method by which the papers were read in abstract and the sessions devoted to discussion was another factor in swelling the attendance at the meeting. Added to these was the location in the Berkshire hills, which are particularly attractive in September.

Many of the members and guests made the journey to Lenox in a special train leaving Boston at one o'clock. On arriving at Pittsfield they took automobiles for the seven mile drive to Lenox, reaching there at about six o'clock. Many other members came from various parts of the New England and New York States by motor direct and early

ALBERT GREENE DUNCAN, PRESIDENT OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS

in the evening the capacity of the hotel was taxed to the utmost and some of the late comers had to be accommodated in near by cottages.

While the weather was not all that could be wished for, there was no rain and enough sunshine to enjoy the wonderful beauty of the Berkshire Hills during the time not occupied with the business program.

The Committee on Meeting consisted of: Messrs. Grosvenor Ely, chairman; Robert Burgess, Jno. H. C. Church, Stephen C. Lowe, F. W. Parks, William C. Plunkett and W. Frank Shove.

The proceedings ran very smoothly and showed the careful planning and attention to details given by Secretary Woodbury and the committee. President Duncan scored a decided success as presiding officer.

After the first session on Tuesday evening had been called to order President Duncan delivered the following address which was heartily commended on all sides for the ability with which he had discussed the trying situation in the trade:

PRESIDENT'S ADDRESS

By ALBERT GREENE DUNCAN. President, Treasurer Harmony Mills, 77 Franklin St., Boston, Mass.

Your President feels in addressing you tonight that a most difficult task devolves upon him. The cotton manufacturers of America have had to face problems, and trying ones, but they have been those particularly affecting the industry itself. We have never, at least in the present generation, faced a situation so perplexing and of such world-wide import as now, when in common with so many other lines of human endeavor we find stagnation, disarrangement, and threatened disaster on every side.

Why are we as a nation the innocent sufferers from a quarrel not of our own making, and in which we have the strongest determination not to be involved! The causes lie deep in the structure of our country's life and history.

Every nation in its progress from savagery to civilization passes through three well defined stages of progress. The first may be called natural development, in which men are engaged in fishing, fur trading, the breeding of animals, agriculture and mining. The second may be called industry, in which the raw materials of the mines, farms and forests are combined for the uses of civilization. During this period men gather themselves together in thickly settled communities, bank credits replace barter and means of transportation for raw materials and finished products are devised. The third and highest stage in national life is that of commerce, when having developed its natural resources, perfected its transportation systems and solidified its credit a nation seeks to specialize in those products which its climate, resources and national character are best fitted to produce, and send these products broadcast throughout the world.

The countries of Europe had passed through the first stage of natural development long before this nation was established and during our early years they expanded their industries far beyond their own needs, and world-wide commerce has come to them in natural sequence. Their congested populations and highly developed industries have forced the older nations of the world to seek strenuously an outlet through commerce and colonization, and so their means of foreign transportation have grown, and their trade routes have girdled the globe. Controlling the routes of trade, they have become not only the carriers of their own goods but the distributors of the merchandise of others, and handling the distribution they have managed the financing, through which the exchanges of merchandise are made.

This logical and inevitable development has built up in England, France, Holland and Germany a concentration of capital devoted not alone to their own needs, but to the financing and distributing of the products of their competitors. They are not merely producers but the great middlemen of the world, and this commercial expansion has resulted in cumulative profits to those nations engaged therein. An idea of the immensity of this business is shown by the fact that at the outbreak of hostilities London bankers had outstanding advances of over $2,000,000,000 for drafts of sellers of merchandise of other countries.

Commerce invariably brings with it a concentration of capital, as international exchange follows the trade routes of the world, leaving its toll with the nation through whose hand it passes. The great commercial nations have thus become the great banker and creditor nations, loaning their capital not only for moving the products, but for developing the resources of the countries with whom they trade.

In natural development and industry this country stands preeminent. Its progress has been the wonder of all nations. In increase in population, in railway mileage and by all the standards that material prosperity is judged we are leaders. In actual total wealth we rank first. We possess $137.00 per capita, but so great has been the task before us in our comparatively short national existence that agriculture and industry have been fully taxed to keep pace with our expanding population. Intent on our internal progress we have never taken the position as a commercial nation to which our resources, energy and skill entitle us.

This is but a hasty summary of the progressive development of nations at peace, but a war, the extent or the consequence of which none of us have ever dreamed, has plunged the world in disorder. Driven by necessity to use every resource in their own dire extremity, the warring nations have called and withheld the capital hitherto freely loaned to the peoples of Asia and the Western Hemisphere, and by the withdrawing of this

capital they have not only made their debtors feel the pinch of want, but have been unable any longer to facilitate the necessary distribution of the products of nations not involved in the struggle.

To put the matters more concretely, the business of the world has been done on the basis of credit through the medium of the 90 day draft on London; probably not 5 per cent. of the transactions between nations ever being settled by the actual transfer of that universal standard of value, —gold. With this suspension of credit the world finds itself forced to a cash basis, and though we may wish as a nation to dispose of our products, which are in universal demand, and are eager to buy from other nations the materials on which our industries depend, we are reduced very nearly to the old system of barter prevailing in uncivilized times. It is estimated that England during the last few years has annually invested among the nations of the world about $1,000,000,000 of her surplus capital, and now holds over $5,000,000,000 of American securities. We have paid the interest on this vast sum and have met partial calls for this loan from time to time by the shipments of grain, cotton and other commodities, yet we are still very much their debtor. Figures are inadequate to picture the amount of this indebtedness, for it is a sum far beyond the power of this country or any other country to pay on demand. This is said with no disparagement of our prosperity. In per capita wealth and in boundless natural development we have congratulated ourselves for many years that we were one of the richest nations in the world, but our assets are not liquid. They are tied up in railroads, mines, mills, and in all the multitude of our business enterprises, which although real wealth, are not readily convertible. England, France, Holland and in a lesser degree Germany, have in addition to these fixed assets, accumulated as the result of their longer national life and highly developed world commerce, a much larger surplus of quick assets than we can possibly claim, and in the time of calling of loans it is with nations, as with men, that conversion of fixed assets is a slow process, often accompanied by great shrinkage of capital.

Because of the optimism that is characteristic of the American temperament we have heard a great deal in the last few weeks about the development of our export trade. Follow this for a moment and see where it leads us.

South America is our nearest neighbor, and trade routes thereto are naturally the least liable to interruption by any of the warring nations. Further we would seem to be in the comfortable position of a salesman who, through disaster, had lost his chief competitor. Without any spirit of pessimism it behooves us, however, to face the situation squarely and we find that South America is deeply in debt to the old world, that almost all their government loans are owned in Europe, that most of their railroads and industries are financed and even operated by foreigners. The nations to the south of us are in an earlier period of national life than our own country and have not far advanced beyond the stage of natural development, with industries as yet nowise ample to their needs. Our southern neighbors have been the largest users of foreign credit on which they have been almost entirely dependent. These advances have taken the form not only of actual investments of capital in their enterprise, but in the granting of long credits to merchants and in the financing of all the complicated transactions between producer, dealer and consumer. As a result of this financial relation the trade routes to them and international exchange have been in the hands of our competitors, and we as a nation have been obliged to depend upon our rivals for the distribution and financing of what small amount of trade we have secured from South America.

Are we prepared at the moment with all the problems, which we face in upholding our own complicated structure of credit, to assume the added burden of the financing necessary to relieve our South American neighbors from the desperate situation in which they find themselves? Means are ready at hand to facilitate this financing by exchange through New York rather than through London, but if we expect to do more now or in the next few years than to sell emergency goods we must be prepared to assume the additional burden of financing the trade and assisting the enterprises from which European nations may be forced to withdraw.

I have gone into this discussion of international trade in some detail, for the problem which confronts us at home and abroad appears to be largely a financial one, affecting not only our international relations, but the relations between producer, manufacturer and consumer in our own country. By the use of the easiest methods we have lulled ourselves into fancied security, and turned over to foreign nations five-eighths of our cotton crop, 15 per cent. of our wheat, 60 per cent. of our copper production, besides numberless other commodities, both raw and in the finished state. We have received in exchange for these an influx of gold or its equivalent, congratulating ourselves meanwhile that the balance of trade was in our favor, yet not realizing that we were leaving to our competitors in the world market the banking facilities and the distribution of our own products.

It is time for us to take account of stock and to realize that to produce our raw materials, to manufacture them into finished goods and be satisfied to sell them merely to our people or to the foreigner at our ports is a mistake. We should take this opportunity which has brought such a rude awakening, to seize by every means within our power upon the avenues of distribution represented by the great trade routes of the world, where the fleets of foreign merchantmen go to and fro and where our flag is rarely seen. As a natural sequence of such foreign commerce we shall secure for ourselves the added reward that the financing of the raw materials and manufactured goods exchanged with other countries must bring us.

After years of effort the beginnings have been made in the foundation of an international exchange financed by our own banks, but we should not be satisfied until our manufactured products as well as our raw materials are carried to our

customers and even to our competitors in our own ships. By no artificial means can our merchant marine be revived. It is not sufficient for us to own ships, we must be able to operate them under the American flag along the trade routes to the ports where we wish our products to go, and to do this we must devise wise measures by which the operation of such ships can be profitable. Our present antiquated navigation laws impose a burden on the operation of ships under the American flag that will not be relieved by any subterfuge of American registration. In other words, unless we make shipping as profitable as other lines of endeavor we cannot expect American capital to embark upon it. Recent proposed legislation, it may be noted, has not been drafted in favor of ship owners, but will tend to increase rather than diminish the handicap under which they now labor.

How can we convert our national wealth into quick assets? For if, as has been said, the trade follows the flag, how much truer it is that trade follows the man with the money bag.

We can stop our national tendency toward waste and extravagance, not alone in the individual, but in our governmental activities. Coincident with the high cost of living has come the higher cost of government, and to a more marked degree, for figures show that in the last twelve years the average citizen pays 63 per cent. more taxes without commensurate benefits for such payment. We also have the multiplication of commissions, the endless waste which a political system based on patronage entails, the unnecessary expenditure of a nation's wealth in buildings and improvements which satisfy our national pride rather than enhance our national wealth and stability.

We must also by every means in our power stop the nation-wide distrust of corporate aggregations of capital. In the last few years most of the legislation having to do with business has been passed with the intent to punish rather than preserve, to tear down rather than to build up. It has been strangulation rather than regulation.

Capital is not the investment of the millionaire; it is the concentrated savings of the millions. Our great corporations are not owned by a few, but are the industrial savings banks of the nation, and it is no exaggeration to say that the majority of men managing our corporations, both large and small, regard themselves as trustees for the savings of their fellows.

While no doubt evils have crept into our business life, there is no justification for the unproved and sensational attacks which have been directed against capital, without any thought of the injury inflicted on the multitude of small contributors to the great aggregation.

The occurrences of the last two months have brought home to us as never before the power and the benefit to every citizen in the republic, no matter how humble, of capital when rightly used, and to the glory of American business be it said that in the trying times through which we are passing capital has borne the full brunt of the emergency, realizing that it was only by its free use that the complicated structure of our industrial and commercial life could be kept secure.

If there existed a money trust in this country, cruel, grasping, and seeking its own selfish ends, as has been so vehemently charged, the last sixty days would have seen one-half of our enterprises in the hands of receivers or being bought up at bargain prices.

But how different the action of so-called concentrated financial power. With the true spirit of cooperation, instead of causing wrecks they have furnished pilots and lighthouses, and instead of the destruction of commercial enterprise it has been maintained and preserved in spite of the interposition of strange and unanticipated issues.

The history of the last few years of national and state legislation has witnessed a development of commissions never before dreamed of in any country under a republican form of government. These commissions have been organized for every conceivable purpose, but mainly their energies have been devoted to the regulation and investigation of so-called existing evils in our commercial structure, rather than to the development of our admittedly adequate resources along lines not hitherto undertaken. How much wiser it would be if commissions should be empowered to study the whole subject of the encouragement of American trade and recommend to Congress what legislation is needed to enlarge our surplus of quick assets, free our capital from harassment and restriction and expand our foreign trade by enabling American shipping to take its place on the high seas as the messenger of our already firmly established industries. International exchange with its inevitable profit would then be in our own hands, and no artificial stimulation would be needed to establish in this country the financial capital of the western hemisphere. The periods of industrial depression through which we have passed would thus be obviated by extending our influence over the world, instead of fighting each other for our own market, so often overstocked. I believe that many of the business evils so bitterly complained of may be traced to the source of excessive competition and would then surely right themselves without government regulation.

What I have hitherto said applies to our industries in general, but to cotton manufacturing most of all. The spinning and weaving of cotton cloth was the first industry in America to leave the home for the factory. From small beginnings it has built up an invested capital of at least $843,000,000. It is still, as it always has been, highly individualistic. It is one of the few industries against which no charges of illegal combination or any of the other wrongs so bitterly complained of have ever been made. It is the one industry adapted to supply the needs of all nations of the world, whether civilized or uncivilized. To anyone familiar with the over production which has been in evidence during the last decade it is patent that we can more than supply the wants of our own people. We are, therefore, the industry most dependent on the development of our country as a shipping and financing nation. To use a homely expression: In what export trade we have so far done we find ourselves in the position of a storekeeper who uses his competitor's banking facilities and delivery wagons. If the cotton industry is to be prosperous and give steady employment

to its vast number of operatives and a fair return to its investors, we must make every effort to get and keep the financing and distributing of our products to the nations of the world out of the hands of our competitors; for there is no question that with these facilities in hostile hands we are constantly being put in a position where competition is impossible.

I would urge upon you, gentlemen, members of our Association, to give attention to these financial problems and bring them before your representatives in state and nation in no uncertain terms. For the people of the United States must learn a lesson from the present crisis and make it their chief concern that America shall in the future control the financing and distributing of its own products.

Following the president's address, Charles T. Plunkett, of Adams, Mass., gave a very interesting talk, illustrated by the stereopticon, of a recent visit to South America. The various trade routes were shown and also many scenes in Brazil, Uruguay, the Argentines, Chile, Esquador and Bolivia.

CHARLES T. PLUNKETT

A. F. Bemis, of Boston, followed with an interesting account, also illustrated, of his travels on the Hooghley River, India, which is of special interest to textile men as it is the center of the jute industry.

The second session on Wednesday morning opened with a discussion of the paper by A. M. Allen, of the Modern Gin & Compress Co., Little Rock, Ark., on the production and preparation of cotton for the spinner. After Mr. Allen had outlined the contents of his paper, Arthur H. Lowe, of Fitchburg, Mass., asked to what extent the government standards for cotton were used in the South. Mr. Allen replied that many associations, brokers and cotton merchants are now using the government types, but that they are not used much by the farmers. In reply to other inquiries he stated that the price paid at present for picking seed cotton in his district is about 60 cents a hundred pounds, equal to $9.00 per bale (500 pounds) of ginned cotton and the average field hand can pick from 150 to 200 pounds of cotton in a day while some will pick more. In reply to a question from Franklin W. Hobbs, of Boston, Mr. Allen stated that the price for picking varied widely and that while a picker can earn from 90 cents to $1.25 per day, later in the season as is usual the rate will probably advance to one dollar or more per hundred pounds. The average price for picking has been about $1.00 per hundred pounds of seed cotton. Every year more or less growing cotton goes to waste for lack of help to pick the staple. Mr. Allen knew personally of several hundred acres of standing cotton that went to waste in previous years and thought there would be much more than usual this year. The picking season in his district begins about September 1 and lasts until February 1. The cotton in the field matures gradually and a field has to be picked over several times during the season.

Referring to the paper by Dr. W. H. Coon, of Haverhill, Mass., on provisions for the health of employes, President Duncan stated his belief that the laws in relating to personal injuries to employes by which a flat rate of expense is borne by all mills, would in time be modified so as to graduate the burden according to the conditions in the respective plants, the lowest charge being

borne by those mills in which the best conditions prevailed among the employes.

F. W. Dean, of Boston, who presented a paper on the sources of power, was questioned regarding the Humphrey engine, which he said had not yet come into general use. Very heavy castings are required and it was found impossible to get castings large enough in England for the Humphrey pump now in use at London. This pump, Mr. Dean said, would lift water about 30 feet and, it was believed, would prove valuable for handling sewage. Secretary Woodbury stated that the strain on the pump increased rapidly with the height, necessitating very heavy castings. Replying to Mr. Plunkett, Mr. Dean said the cost of lifting water 3 or 4 feet by a Humphrey pump was about 1/10 of the cost with the old style rotary. Tests at London showed a consumption of 8/10 pound of coal per horse power per hour, the power being indicated by the weight of the water and height of the lift.

Replying to questions Mr. Thomson, who presented a paper on the value of trade-marks, stated that registration of a trade-mark does not improve the owner's rights, but does assist in protecting them. He compared it to the protection afforded by a fence against invasion of the property. A man cannot acquire exclusive monopoly of his own name. Another man of the same name may apply it to products having the same distinctive properties, if he does so fairly, that is, making no attempt to palm off his goods or those of the man of the same name and sufficiently differentiates his label and package to prevent confusion by the purchaser. A surname may be registered if it has been used continuously and exclusively for a period of ten years preceding 1905. Replying to Arthur H. Lowe, of Fitchburg, Mr. Thomson stated that trade-marks were not as well protected by the government as patented inventions and advised a change in the trade-mark law. Registration should be made compulsory if the owner of the mark desires to restrain concurrent use. Under the present law one who adopts a trade-mark may become an unwittingly infringer. If registration was made obligatory he would be afforded an opportunity of discovering the prior registration.

Secretary Woodbury gave an account of his work in connection with the threatened embargo on imported cotton because of the prevalence of the pink boll worm, and impressed on his hearers the fact that the Government has the right to restrict or prohibit the importation or interstate transportation of any material that may be a source of danger to plants or animals. He added that the agreement by the cotton spinners to burn the seed of cotton used at their mills had been very favorably received by the officials at Washington, and was being faithfully observed throughout the country at the present time. President Duncan, in discussing this subject took occasion to refer in very complimentary terms to the work done by Secretary Woodbury in bringing about the arrangement between the Government and the cotton spinners, and stated it was beyond question that the trade had been saved from a very serious situation by reason of Secretary Woodbury's efforts.

The meeting was then thrown open to general discussion by the members. On motion of W. Frank Shove a resolution was adopted authorizing the president to appoint a committee to investigate the question of the American export trade. An amendment was adopted requesting the committee to make a preliminary report on the measures that should be adopted to take advantage of the present war conditions in developing exports from the United States. On motion of John S. Lawrence, of Boston, a committee was appointed to consider the question of collecting useful textile statistics. Arthur H. Lowe, of Fitchburg, Mass., suggested that James B. Reynolds, of the Textile Bureau be requested to give an account of the work of the organization, which is supported in part by the cotton association.

Mr. Reynolds began by calling attention to the fact that importers should not be left alone in supplying information to the Government regarding the administration of the tariff laws, as had been the case in the past. The manufacturers should take a part in this important work in order to keep the valua-

tions of imported goods up where they belong. Vigilance in this respect on the part of textile manufacturers would, in Mr. Reynold's opinion, result in a difference of 5 to 25 per cent. in the valuation of goods passing through the custom houses. He urged manufacturers to cooperate with the Textile Bureau in order that the Bureau officials might do better work in looking after textile interests at Washington, and suggested that the Cotton Association appoint a committee to cooperate with him and his associates in this important work. He stated that largely as a result of representations made by the Textile Bureau imports were now being classified in much better shape than formerly.

The convention closed with a banquet on Wednesday night at which addresses were made by Arthur R. Marsh, of the New York Cotton Exchange and W. P. G. Harding, of the Federal Reserve Board. Mr. Marsh, who was the first speaker, believed that stable conditions in the cotton trade could be obtained only by restoring the usual facilities for trading in cotton for immediate and future delivery. The obstacle to such restoration was the certainty that if the cotton exchanges should open for business about one hundred thousand people throughout the South would make a rush to sell cotton with the result that the price would drop to hitherto unheard of levels, 5 cents or even 3 cents a pound. The storing of a large quantity of cotton would only aggravate an already difficult position because it would hang as a dead load on the market and serve to depress prices until it was disposed of by purchase for immediate delivery or for delivery at some future time. Mr. Marsh felt somewhat diffident as a cotton trader in discussing the question, owing to the way in which the Government at the recent Washington cotton conference had ignored the cotton merchants and traders and confined the invitations to growers and manufacturers. He was so sure of his ground, however, that he would point out the facts and he assured his hearers that the cotton merchants would cooperate heartily with other branches of the trade in restoring sound conditions. Mr. Marsh believed that the Government should come forward with a plan by which advances could be obtained on cotton, but he deprecated anything that would result in the valorization of cotton. He paid his respects to the Lever bill and said that law was one of the causes for the present uncertainty. The framers of the law could not tell what it meant, and its disturbing effect was all the greater because it was to go into effect on Feb. 18, 1915, when the stock of cotton would be at its highest point. Mr. Marsh expected that his views would conflict sharply with those of Mr. Harding who was to follow him, but he, Mr. Marsh, was convinced of the soundness of his views.

Mr. Harding began his remarks by stating that while, as President Duncan had said, he was a loyal son of Alabama, his parents were born in Boston, and his grandparents were buried in Springfield, Mass., and for that reason he could claim to be a grandson of Massachusetts. He referred to the gratification it had afforded him on the previous day to discover how closely the views expressed in President Duncan's address coincided with his own, making it unnecessary for him to say much that he had intended to include in his address at the banquet. Mr. Harding told his hearers that they could, however, imagine his consternation when listening to Mr. Marsh's address to hear that gentleman say exactly what he himself intended to say on all of the remaining points of the cotton problem. In Mr. Harding's opinion there were a number of influences which would tend to prevent extremely low prices for raw cotton. Every year there are two or three million bales of cotton known in the South as "distressed" cotton, which is sold early to meet the advances made to the growers. This cotton, if thrown on the market this year would unquestionably go at very low prices, but the probability is that it will be held by those who have advanced money to the planters in the expectation that higher prices in the future would enable them to obtain funds with which to liquidate the indebtedness. Mr. Harding referred to the

improved credit facilities afforded by the banking act and stated that the Government was prepared to afford all the assistance in its power in restoring sound business conditions in the cotton rade. Throughout his address there was an unmistakable note of optimism. While he made no attempt to belittle the difficulties that had resulted from the war in Europe, yet he believed that there were many influences which would enable the trade to meet the situation and avoid disaster. Mr. Harding said in part:

The cotton industry is perhaps as seriously affected by the European War as any other, and this statement applies with equal force to all connected with it. The titanic struggle between the great Powers of Europe has disarranged credits and has disturbed the exchange of commodities throughout the world, and while cotton is classed as a staple crop and goods manufactured from it are necessities they are not as supremely and immediately necessary as foodstuffs. Because of this fact the first effect of a great war is to advance the price of grain and to depress that of cotton. Yet the economic law of supply and demand, while apparently suspended at times, is never abrogated, and always in the end reasserts itself. At the present juncture the war is operating as an obstruction to the normal current of the cotton trade. Sooner or later, however, even should the war continue, the level of the obstruction will be reached, and the flow of business, except in some of the countries actually engaged in war, will again become normal. Restoration of peace would act as a removal of obstructions and would release a large volume of business now being held back, so that we are justified, if we look ahead, in taking a more cheerful view of conditions which appear at this time to be depressing. Cotton goods are the cheapest of all textiles and should replace during hard times finer and more expensive fabrics. Cotton can be used in considerable quantities as a substitute for jute and other materials in the manufacture of burlaps and sacks; mills in England are reported as running double time on khaki for army uniforms, and there is no reason to doubt that the trade will ultimately absorb the world's production.

Compared with the prices that have obtained for the past three or four seasons, present quotations seem very low, but it is doubtful if large stocks of cotton could be secured at prevailing prices, as an active buying movement would undoubtedly enhance values. It is argued that the Southern States have produced a cotton crop, which, added to that grown in other countries, is, under present conditions, about 5,000,000 bales greater than is required for the world's needs, and the fear that this is true is causing much apprehension in the South. There have been predictions of general bankruptcy and ruin, and yet regardless of all the pessimistic talk and in spite of increasing receipts, the price has advanced during the last three weeks 1 1/2 to 2 cents per pound; and it is well worth while for cotton manufacturers to consider these facts, to analyze them carefully, and to anticipate the probable effects. The cause is not hard to find. For many years the South has been gaining in wealth and its farmers have been growing more independent, better methods of agriculture have been introduced, marked progress has been made in the diversification of crops, large plantations have been sub-divided into small farms, and in many cases the tenant farmer has become his own landlord.

"DISTRESSED" COTTON SOLD LOW

There is in every normal year a certain proportion of the crop which comes in early and which seeks the market at any level that it can find, which is commonly called "distressed cotton." This is the cotton that is now being sold at 7 1/2 to 8 cents and it would be well for manufacturers to bear in mind that at these figures much cotton will be withheld from the market for months to come.

The last four crops, including seed, have brought the people of the Southern States a gross average of nearly one thousand million dollars per year, of which amount about one-half has come from domestic and Canadian mills and the remainder represents the value of exports to foreign countries. By the sale of this crop the South has been enabled not only to discharge its obligations promptly every fall, but has added half a billion dollars each year to the national trade balance. Cotton production is stimulated by high prices, and conversely it is curtailed when prices fall below the cost of production. Never have the evils of over-production been so universally appreciated in the South as now, nor ever before has there been such grim determination to hold cotton and to radically curtail acreage. Public sentiment in many Southern States has been so aroused that there is now a general clamor for legislation by the States to regulate the production of cotton, and some farmers have gone so far as to demand that the planting of any cotton whatever in 1915 be prohibited. Of course, extreme action of this kind is not anticipated, but it is undoubtedly true that should prices considerably below the average cost of production, which is probably about ten cents per pound, prevail for the next six months, cotton will be parted with only as necessity arises, and most serious curtailment in acreage for the next crop will be the inevitable sequence. But it would be most unfortunate if by any chance the production of cotton next year should be so small as to make the trade dependent upon the present crop for the greater portion of two years' supply. Cotton goods can compete with more expensive fabrics only up to a certain price level, and if a year hence the prevailing prices for raw cotton should be as abnormally high as they are now abnormally low, the manufacturers of cotton goods will have their present problems aggravated, and would be fatally handicapped in a movement for trade expansion at the very time when it is probable that conditions would be ripe for efforts in that direction.

DEMAND LIKELY TO INCREASE

I shall not undertake in the presence of the foremost experts to hazard any guesses as to the probable consumption of cotton within the next few months, but I will be bold enough to predict that as the season progresses there will be a steadily increasing demand for raw cotton by the mills, with a marked increase in the demand for export. Of course, as long as present conditions continue, the demand from Germany, Austria-Hungary, Belgium and France will be greatly curtailed, but there should be a good demand from Great Britain, Spain, Italy and from Russia, which can obtain its supplies independently of routings through the Baltic Sea. Ship room is now available, prompt action by Congress has enabled our Government to provide marine insurance, the bank of England is again discounting bills, and practically all the obstacles in the way of exports of all foreign countries except Germany and Austria-Hungary have been removed. Foreign exchange conditions have within the last few days been vastly improved by the formation of the gold fund as approved by the Secretary of the Treasury and the Federal Reserve Board, and as our exports of grain and cotton increase in volume, as they must do in the very near future, normal quotations for sterling bills will again prevail. I am violating no confidence when I state that rapid progress is now being made in the organization of the Federal Reserve Banks, and it is my personal opinion that the system will become effective during the ensuing month. The Secretary of the Treasury has acted with wonderful celerity throughout the crisis, and by his promptness in authorizing and issuing emergency currency under the provisions of the Aldrich-Vreeland Act as amended has, in the face of moratoria in practically nearly all other civilized countries, kept the United States not only upon a cash basis, but upon a gold basis, and he asks only the intelligent and unselfish cooperation of the business community, which he confidently expects to aid him in the speedy restoration of normal financial and commercial conditions throughout this country.

The tremendous waste incident to war, will, of course, be felt all over the world, and losses will inevitably ensue, but there is not reason, as far as this country is concerned, why those losses should not be so uniformly distributed that they will not fall with crushing force upon any section, or upon any industry, and I firmly believe that American pluck and American energy are going to reassert themselves, and that American farmers, merchants, bankers and manufacturers will cooperate with their Government, and with each other, in solving present problems, and that they will put themselves in a position to grasp the opportunities that the future is bound to offer.

After Mr. Harding's address the following resolutions were adopted on motion of Franklin W. Hobbs, of Boston:

Resolved by the National Association of Cotton Manufacturers, That as a result of one of the most impressive lessons of the great European war, the United States should adopt prompt and vigorous measures to secure the establishment by private enterprise of lines of American merchant steamers to the chief ports of the world, so that this country may no longer be dependent for nine-tenths of its ocean carrying trade on foreign ships and foreign ship-owners.

Resolved that this Association regards an adequate American marine as indispensable to the full development of American commerce, and as an essential auxiliary of the national defence in time of war, and believes that by all proper methods these important facts should be impressed upon the American people and their law makers.

Resolved that the thanks of this Association be given to A. M. Allen, John Brandwood, William Hall Coon, Armo Schmidt, Henry C. Thomson and W. D. Hunter for their papers in which they have given the Association their specialized knowledge for the benefit of our industry.

Resolved that the thanks of the Association be given to Arthur R. Marsh for his explanation and interpretation of the Lever cotton law and for his remarks in relation to the cotton trade in general.

Resolved that the Association express their appreciation to Hon. W. P. G. Harding for his attendance at this meeting and for the timely and able address he has made. The success of our industry and of all business is so dependent on a sound national financial system that our relations with the Federal Reserve Board should be most cordial.

Following is a list of the new members elected:

Active Membership—Edward N. Barnard, American Thread Co.; Nelson A. Batchelder, superintendent Berkshire Cotton Manufacturing Co.; Frederick R. Brown, treasurer Booth Manufacturing Co.; John C. Butcher, superintendent Merrimac Print Works; Frank H. Filley, vice president American Manufacturing Co.; Harry T. Haley, manager Royal River Manufacturing Co.; Walter S. Mitchell, agent Chicopee Manufacturing Co.; George W. Ronney, superintendent New Hampshire Spinning Mills; R. L. Van Dyke, American Thread Co.

Associate Membership—William Almy, cotton merchant, William Almy & Co.; Frederick H. Andres, sales manager Pilavachie & Co.; Archibald H. Fuller, agent John Hetherington & Sons Ltd.; James Lawrence, Jr., member of firm of George H. McFadden & Bro.; T. J. Lynch, New England manager Allis, Chalmers Co.; C. C. Payson, cotton merchant; Ingersoll, Amory & Co.; Perry C. Raynes, consulting engineer and mill manager H. C. Raynes, Inc.; William P. White, treasurer and general manager Lowell Paper Tube Corporation.

The ball game between the two teams of the Textile Base Ball Association was played on the village ball ground and after a four inning struggle the Blues were victorious with a score of 19 to 8. The line-up was as follows:

"Blues."	"Reds."
Palmer, c	Bryant, 3b
J. Glennon, p	Howe, 1b
J. Cooper, 1b	Spillan, lf
T. Glennon, 2b	Ballou, ss
Mumford, 3b	Cottrell, 2b
A. Cooper, ss	Thomas, p
Dana, lf	Noble, rf
Davenport, rf	Sullivan, c
Hatch, cf	Mackay, cf

Score by innings:

"Blues"	6	0	13—19
"Reds"	3	3	2— 8

Umpire—F. B. Kenney

Frank B. Kenney, who has made a reputation as umpire in previous years, handed out justice with impartiality to both sides, at least to the extent that there was no kicking and everybody was happy. The Blues for the third time were awarded the honor of holding for the coming year the cup presented by Fibre & Fabric.

The annual contest for the golf cups offered by the Board of Government was played on Wednesday afternoon with the following results: W. B. Plunkett, treasurer of the Berkshire Cotton Mfg. Co., won the cup for the best net score of 73 gross being 93 and handicap 20. W. C. Plunkett won the cup for the best gross, with a card of 82. Another member of the Plunkett family, Theodore R. Plunkett, superintendent of the Graylock Mills, turned in a good card of 87, tying with E. T. Manson.

The cup presented by the Pairpont Corporation to the team winning three years in succession was awarded to Capt. Glennon of the Blues. Stephen C. Lowe announced that he would offer a new cup for the winning team next year, to be awarded on the same plan as the cup heretofore offered by the Pairpont Corporation.

SECRETARY'S REPORT UPON THE PINK BOLL WORM

On May 5, this Association received information that a public hearing would be held at the Department of Agriculture, Washington, D. C., on May 15, to consider "three proposed measures to limit the entry and manufacture of foreign lint cotton to the United States." The notice further stated "it is also proposed to prohibit shipment of foreign cotton in the United States to the South for use in southern cotton mills."

One of the accompanying notices covered this ground "prohibiting the shipment of lint cotton from the territory of Hawaii," another "from any foreign country," and the third relative to "prohibiting the shipment of imported lint cotton from any northern state into or through any State, Territory or District of the United States," and also on the date appointed for the hearing, a bill (H. R. 16,582) was introduced into the United States House of Representatives providing "that the Secretary of Agriculture is required and directed to exclude from importation into this country, cotton and cotton seed from Egypt," etc.

A condensed statement of the above facts was sent to the members of this Association on postal card notices May 9, this form being used in order that someone at each mill represented in this Association should be advised; and in addition to this your Secretary informed as far as possible by telephone all cotton manufacturers believed to be users of Egyptian cotton asking them to be present at the hearing.

By direction of President Duncan your Secretary was present at the hearing, at which a large number were present, none of them, however, being northern manufacturers. This hearing was held by the Federal Horticultural Board to which the question had been referred by Hon. David F. Houston, Secretary of Agriculture.

It should be understood that the Secretary of Agriculture has been empowered by a special act of Congress to suspend either the importation or interstate commerce in any vegetable or plant material which he considers to be pernicious, and that this power has been exercised without question upon a large number of such materials in prohibiting both importation and interstate commerce in such products. (See an act to regulate foreign commerce, etc., known as the Seed Importation Act 37, Statutes 506, approved August 24, 1912.)

At the hearing, C. L. Marlatt, Chairman of the Federal Horticultural Board, made a statement upon the question at issue. The pink boll worm has been known to infest cotton plants destructively throughout the Orient and other tropical countries for about seventy years and about four years ago reached the Egyptian cotton fields from India. Where it thrives in Egypt, it has both impaired the staple and reduced the output in some instances as much as 50 per cent.

Information upon this pink boll worm was presented to the Association in the paper by Arno Schmidt of Manchester, England, upon Egyptian Cotton (Transactions, Volume 92, page 149) and fuller information is contained in his book on the subject. The Association had a number which were distributed to members on application, in accordance with the notifications on programs and calls to the meetings. From reports of Mr. Schmidt and also from statements of persons having personal knowledge of Egyptian cotton fields, it has been also stated to your Secretary that these pink boll worms attack clover and alfalfa in Egypt, but in the fortunate lack of any experience there is not information as to what other crops in the United States, outside of cotton, it might attack if it bred in this country, but it is evident that this insect would be a serious threat to all agricultural interests, including the cotton in this country, whether at the North or at the South.

Certain insect traps as illustrated by Mr. Schmidt were set up in the cotton fields. American quail, which are said to eat these worms, were imported in large numbers and liberated in the cotton fields, and the fellaheen were prohibited from planting their cotton seeds from the ginneries, as about one seed in five contains larvae, but were obliged to deliver their seeds to the oil mills, where the process of extracting the cottonseed oil, which is impaired by these larvae, would prevent further danger from that source, and to obtain their seeds for the next crop from the Botanical Department of Egypt.

Preventative measures against the introduction of this insect pest into the United States as presented by the Board consisted of the prohibition of the importation of such cotton; the treatment of the bales by exposing them to heat of sufficient temperature to destroy the larvae; opening the bales at some point near to the seaports where Egyptian cotton arrived in the United States from Alexandria by way of Liverpool; and after the cotton was put through the opening and picking process to rebale it for distribution to the mills; and the last suggestion was to prevent interstate commerce in Egyptian cotton between the northern and southern states, as Egyptian cotton is imported in its greatest quantities to Boston; next, New York; and third, Philadelphia.

Your Secretary at the hearing called the attention of the Board to the great importance of Egyptian cotton as a raw material, unique in its characteristics and essential for certain lines of cotton manufacture which had been built up in this country after many years' trial, and which for reasons outside of this hearing had been having hard times. Its length and strength of fiber of peculiar luster fits it for the finer lines of cotton dress goods and knitted underwear, and especially when mercerized, its natural luster is enhanced to that resembling silk, and its great strength of fiber makes this staple of great value for automobile tires; and the prohibition of the importation of this material would throw these lines of manufacture entirely in the hands of foreign rivals from which it would probably be impossible by commercial methods to ever restore this line of industry to the United States. Furthermore, the prohibition of interstate commerce in Egyptian cotton would appear to be inequitable to those spinners using the material in the southern states and the same would apply to those who would have to meet the added expense of picking and rebaling the cotton. As cotton is such a poor conductor of heat he did not know how it would be feasible to heat the bales throughout to the extent necessary to destroy insect life, and moreover such heating would introduce another hazard of spontaneous ignition to which cottonseed oil is peculiarly subject, as it is the highest of natural oils in this respect, and if a bale was unduly heated, it would cause exudation of oil from the seeds, particularly from those seeds that were cracked, and the hazard of fire would be greater.

The Secretary submitted for the consideration of the Board that if the mills using Egyptian cotton would burn the almost worthless picker waste and seeds at the close of each day's work, by this application of an old-time remedy for the destruction of weeds, with which all farmers were familiar and which has been also applied by surveyors of highways in rural districts and along the rights of way of railroads, this hazard of the spread of the Egyptian pink boll worm in this country would be mastered, and he felt sure that all such manufacturers would cordially cooperate with the Department of Agriculture if the Board should accept this suggestion, and promulgate their wishes in the matter. In reply to questions from the Chairman of the Board relative to the execution of such suggestions within a state as being a function of a state and not of the Federal Government, he stated that if the Board wished he would submit the facts to the executive officer of each Department of Agriculture in cotton manufacturing and cotton growing states in this country and present their replies to the Board.

At the request of the Board your Secretary later presented such statements and received assurances of cooperation in adopting and enforcing the suggestions made by the United States Department of Agriculture.

In this connection, it was found that in three states the statutes did not endow their Departments of Agriculture with sufficient authority to execute such requirements, and the promise was made that bills will be drawn and presented to the next session of their legislatures.

It is only fair to state that there has not been yet any indication of a need for the exercise of such authority by State officers.

The Department of Agriculture, through the Federal Horticultural Board, issued the following circular letter, adopting the suggestions of your Secretary relative to the burning of the picker waste, and called upon the Association to furnish a list of mills using Egyptian cotton. The Secretary obtained this information from various merchants and importers of that staple, and sent the Board a list of 195 cotton mills, but it was learned from the replies that a number of them had given up the use of Egyptian cotton, as the conditions imposed upon the industry during the year 1913 has compelled them to change to coarser goods.

It is true that the European war is an impedident to the importation of this staple, but every day brings us one day nearer to peace, and this does not relax the progress of this matter in the inversion of the Roman maxim in time of war prepare for peace.

It is probable that these precautions against the pink boll worm are temporary, as the weekly reports from Alexandria indicate that the measures are successful to the extent of diminishing this pest, but it will be necessary to exercise the utmost vigilance until authoritatively informed that the hazard has been mastered.

It is believed that by this prompt acquiescence by the mills very serious impediments to the use of Egyptian cotton in this country have been overcome; for it should be clearly understood that it is the published determination of the Department of Agriculture to exercise to the utmost, if necessary, the general authority conferred upon it by law to prevent the introduction of the pink boll worm into this country.

THE PRODUCTION AND PREPARATION OF RAW COTTON FOR THE SPINNER

By A. M. Allen, Vice-President and General Manager, Modern Gin and Compress Company, Little Rock, Ark.

In the production of cotton, the character of the raw material can, to a marked degree, be determined by the producer, but the knowledge on the part of the producer as to what staple and character of cotton gives the best results in the hands of the spinner is, generally speaking, very meager.

The planter by cultivating a particular soil in the same way, perhaps, that he and his forefathers have treated the same soil for many years and in some cases for generations, obtains a bale of cotton which may sell above or below the bale of cotton produced by his neighbor, but which, to him, may appear to be practically the same cotton. He himself, however, is unable to make a comparison and determine the elements which make the one more valuable to the spinner than the other. He is not, therefore, equipped to work intelligently for the improvement of his raw materials, the production of which he in most cases has chosen for his life busines; in other words the planter is without full knowledge of the value of his cotton in terms of yarn. Without this knowledge, to a greater or less degree, the planter is not prepared to make much advance towards reducing the cost of production by increasing his yield and improving his staple and grade. Education along these lines is of importance to the spinner and any assistance rendered to the planter by the spinner will certainly bring profits to both.

When once the cotton has matured and split open the boll, no longer needed, it is then ready to start on its perilous journey to the spinner, during which this delicate and valuable fiber is subjected to abusive treatment that subtracts from the value it possesses at this time, a sufficient number of millions of dollars every year, which, if employed in extending the spinning industry in America, should in ten years give to the United States the added capacity to manufacture her entire cotton crop.

The unnecessary waste of approximately $100,000,000 annually is but an addition to the cost of production, ultimately paid by the planter. I use the term unnecessary waste, and do so advisedly, for the loss is occasioned by the mutilation of the fiber in the process of ginning and compressing, in exposing the raw cotton to the elements, in dragging it through dirt, oil and deleterious solutions, in putting it in packages that force the cost of transportation far beyond that required, in putting the bales in such form as to invite disastrous fires, in clinging to a method of wrapping and a style of bale that most easily gives to the dishonest man the best opportunity to plate his bale, to waterpack his bale, to substitute old bagging and cheap foreign matter for cotton, all of which, I say, is unnecessary and costs more initially and throughout the entire process than it costs to prepare the cotton in such manner as to eliminate all the above items. The proof of this is found in the fact that it is now being done in a practical and commercial way in sufficient magnitude to make futile all arguments against it.

The enormous economic waste in the handling of this American cotton crop has been the subject of discussion for a generation by the planter and his organizations, by the transportation companies, the bankers, the insurance companies and the spinners, both in America and Europe, until our Government has awakened to a full realization of its magnitude and its uselessness, which, like some great disaster imposes a loss felt by all our people and one which becomes a heavy tax especially upon planter and spinner. The Agricultural Department is devoting great energy and skill to the education and training of the planter to aid him in increasing his yield and improving the character of his cotton.

The unsightly and carelessly packed American cotton bale as delivered to the European spinner, our best customer, and whose patronage has in a large degree contributed to the wealth and prosperity of this nation, has so discouraged him because of the seeming uselessness of his appeal for better methods, that within thepast two or three years, more especially he has turned his attention with unusual vigor to the development of cotton growing territory in other portions of the world. We, the Americans, have sat idly by, smug in the belief that no other country on the globe could produce this valuable product in competition with us, blandly remaining blind to the fact that it requires only soil, sunshine, rain and industry to produce cotton. The rapid advance of the past few years in the acquirement of knowledge of how to build productive soils has shown us that no country has a monopoly on the production of the raw material which furnishes food and raiment for the human race.

The dream of the foreign spinner has been to free himself from the well nigh intolerable conditions imposed upon him by the American cotton interests. This is so apparent to the observing mind that "he who runs may read," and it is encumbent upon every loyal American to remove the hoodwink from his eyes and set himself to the task of so bettering the American cotton industry as to preserve our hold upon the trade and the foreign customer. To do this, we must deliver to him the raw material in such attractive condition as will make complaint unnecessary, and make strenuous effort to cultivate his good will as we seek to do in all other branches of trade. In view of the fact that we grow more than 65 per cent. of the world's cotton, is it not lamentably short-sighted in us to delay in adopting the most modern and up-to-date methods and machinery for producing and preparing this product for the market?

Our first study should be of the soil, seed and cultivation. What more important than the production in one district of one variety of cotton and that the best adapted to the particular soil, climate and conditions of that particular district? Our Government is doing splendid work along these lines and in some cases local bankers and merchants are supplementing the work of government agents by offering substantial prizes for best results. If the spinners will add their quota of encouragement by recognizing the greater value of large quantities of the same grade and staple in

one neighborhood by the prices which they pay for it the planter will then have substantial inducement for bettering his grade and staple. Results will be obtained when the planter finds that it pays.

One of the most unfortunate obstacles in the procuring of a better grade of cotton is the custom in many local communities of paying practically the same price for all cotton. The planter being unable to class his own cotton discoverers, however, that his neighbor who neither selects his seed nor cultivates with care and who picks his cotton, gathering with it the bolls and trash, sells his cotton for practically the same price for which he is selling his carefully selected, well cultivated and clean picked cotton. The local buyer makes no discrimination, either because he is not a judge of cotton, or because the low grades thus help to hold down the local market. While he may occasionally buy a low grade bale for more than it is worth he is generally able to buy the high grades for much less than they are worth.

The remedy for this would seem to be the establishment of neighborhood classing stations under the direction of state or government agents by which the planter could obtain from reliable disinterested sources some knowledge of the spinning value of his cotton. This would serve the double purpose of giving the planter an idea of the value of his cotton and enable him to compare the results obtained from different methods of cultivation and different varieties of seed.

After the cotton is picked, demonstrations have shown that it can be greatly improved if, prior to ginning, it is placed in a closed bin and allowed to warm just short of over-heating. This results in a hot-house growth of the immature fibers, while all the fibers take up a little more oil, giving the strength and character so much desired by the spinner. Actual results by this treatment have shown an added market value of from one-half cent to one and one-sixteenth cents per pound.

We dream of a mechanical picker that will gather the crop free from trash. The genius of the world is, I believe, approaching a solution of this problem and a mechanical picker will be produced which will pick the cotton clean and at a material reduction in cost from that of hand picking, which is the most expensive operation in the entire process of preparing cotton for market.

Ginning is the first real torture to which the cotton is subjected. The saw gin is by far the most practical of all machines yet produced for separating the seed and the fiber. To realize that this process consists in forming the seed cotton into a roll resembling a wooden log, then holding it against a gang of saws upon a mandrel usually composed of seventy or eighty sharp-toothed saws ten or twelve inches in diameter running at a speed of four hundred revolutions per minute, is but to wonder how a single fiber can escape mutilation and reach the spinner whole, yet a saw gin so constructed that the relation of the saw tooth and rib at the point where the fiber and seed are separated is such that the fibers are in reality pulled from the seed instead of being separated by a shearing cut, will in the hands of an expert, separate the fiber from the seed, unscarified and practically its full length. In the hands of the unskilful, the saw gin is the most destructive agency used in the preparation of the raw material, not excepting the rapid steam compress to which we will refer later.

Especially in the late picking, a very large per cent. of all cotton bolls contain one or more small immature seeds, which, in ginning, are carried through the ribs with the lint cotton, but these, with other trash heavier than the lint, are largely thrown from the cotton by centrifugal force after passing through the ribs. In those gins using a brush to doff the cotton from the saws, these imperfect seeds and other trash are again mixed with the fiber and pass into the cotton bale, to be removed again at the spinning mill, thus reducing the value of the cotton as offered to the spinner. By substituting an air-blast to remove the cotton from the saws and providing means for collecting the motes and trash after once they are separated, the cotton can thus be cleaned in the process of ginning. Practical machines are now in operation doing this work successfully.

The air-blast system which handles the seed cotton from the planter's wagon or the seed cotton house to the feeders, the gins and into the bale box has much to commend it from the standpoint of the spinner. The cotton being subjected in thin sheets to a blast of air throughout the process loses much of its moisture; the fibers in passing from the saws to the condenser are straightened out and with a proper condenser are formed into a bat which, if pressed closely by passing between rollers can be laid in the bale in layers instead of dumping in uneven wads to be still further punished under the powerful compress.

Upon reaching the initial bale box, the treatment which has brought disgrace on the American cotton industry begins. If a steam tamper is used over the initial bale box to pack the cotton, every pound of water from the condensed steam which escapes from the steam cylinder drips to the center of the bale, giving what is known as the water packed bale. As the sale of water at the price of cotton is alluring, the addition of forty to eighty pounds of water which cannot be detected except by laboratory test is some inducement to be careless about a leaking steam cylinder. This with the storing of loose bales on open platforms at the ginnery to absorb still more moisture from heavy dews and rains amounts to a fraud which has taken from the spinners annually many millions of dollars, as shown by your Secretary's report of last year.

I wish to say, however, that adding water to cotton bales is not limited to America. While in Havre last year and passing through well filled cotton warehouses, I saw men everywhere throwing streams of water on the dirt floors ostensibly to lay the dust, but in reality to throw tons of water into the warehouse to be absorbed by the cotton stored there. I concluded this was one way of restoring to the bale the weight of large samples which many bales seemed to have given up. I am not attempting to cast reflection on any one nor on any class in the cotton trade, but am simply calling attention to customs which result in enormous waste which is a final tax on produc-

tion. Practical machines are in use which eliminate and make almost impossible these abuses. The roller folder or dry packer eliminates the steam tamper. A mechanical device which draws a perfect sample throughout the bale as the bale is being formed makes unnecessary, under proper organization, the future sampling of the bale. The use of a light weight closely woven burlap to entirely cover the bale will absorb much less water than the heavy, coarse woven bagging in general use, and gin compression makes unnecessary open uncovered warehouses.

The mechanical sampler in connection with the gin compress furnishes the most perfect sample that can be drawn from a bale, for it is a complete cross section of the bale. In my own experience I have had no difficulty in making the one sample serve as the only one extracted from the bale in its transmission from the gin to the spinner. An 8-ounce sample from each of 15,000,000 bales amounts in the aggregate to 15,000 bales, worth at 12 cents a pound, $900,000. Is this not quite enough to pay for establishing the character of the cotton crop? Certainly three or four or five times this amount is too much.

The last step in the preparation of the cotton for the spinner and the last mechanical operation through which it passes is one demanded by the transportation companies, viz., compressing. The introduction of the rapid steam compress has made millions of dollars for those who have owned and operated them, but they have cost the cotton industry millions upon millions in loss and damage from the unsightly bale, but more especially from the air cutting and mutilation of the fiber. Some knowledge of the fiber and a glance at the operation of the rapid press furnishes convincing proof of these facts. Compressing cotton is merely pressing the air out of the bale. The steam compress is designed to instantly drive out the air by dropping upon a 500 pound bale, 2,000 tons, equivalent to the weight of a railroad train of fifty cars, allowing forty tons for each car and load. This smashes the bale instantly to a density of sixty to seventy pounds to the cubic foot when with the ordinary bale the jaws of the press are ten inches apart. That is twice the density of pine wood. The air as the bale reaches the high density must cut its way through the bale, which it continues to do, until the density of the cotton prevents it, then the air remaining is compressed inside the bale, but expands when the bale is thrown from the jaws of the press. Much of the cotton heretofore called "gin cut" is in reality "air cut," the inside of many bales when opened having the appearance of being slashed in many directions with a sharp knife. In striking contrast to the brutal treatment accorded the cotton fiber by the rapid steam compress is the work of the gin compress in which the power is applied slowly giving the air opportunity to escape from the interior of the bale without injury to the fiber and securing the required density without compressing to a density much beyond that of the bale after it is thrown out of the press. Five hundred tons so applied to a bale of the dimensions of two feet by two feet by four feet will enable the bale to be tied out with a density of thirty-two pounds to the cubic foot, or about the density of pine wood. If the bale is then bound with bands, slotted in the ends and fastened with rivet hooks, as in the Egyptian bale, for example, the bale will not only retain its size and shape but it will be practically a fireproof bale, charring on the outside very much as a log of wood. There being no air in the bale and the bands being riveted so they cannot yield, the density of the bales remains unchanged and the fire does not burrow into the cotton.

What, then, is the ideal commercial cotton bale? My answer would be, 1st, a bale completely covered; 2d, uniform size for all bales; 3d, exact equal weight of tare on all bales; 4th, a bale that samples easily, if sampling is necessary.

Such a bale is possible only when made at the gin where the bale is formed and compressed in one operation. Uniformity in size of bales makes possible the cutting of all covering the same size and all bands the same length, resulting in uniform weight of tare. In my own practice, I have found that bales made twice the length of the square store with the greatest economy of space. For example the bale two feet by two feet by four feet will load 100 bales or 50,000 pounds to the standard 34 or 36-foot car, and will load in two layers. Five pounds of closely woven burlap is sufficient to completely cover this bale, while six bands fastened with riveted hooks are ample, making a total tare of 11 pounds. These bales are formed in the initial bale box by placing the cotton in layers, which not only separate easily when opened up in the picker room, but make sampling of the bale easy when that is desirable.

A careful calculation of the train cost of handling the entire cotton crop, loaded at the gin with 100 bales or 50,000 pounds to the car as compared to the custom of loading 25 bales at the gin, transporting to the compress, unloading, repressing, reloading and forwarding shows a saving to the railroads of 5 per cent. on more than $200,000,000 annually; this is 5 per cent. on more than one-half the cost of the Panama Canal; an enormous contribution from the cotton carrying railroads toward the maintenance of a system that has brought disgrace upon the most important of all the export industries of the United States. The adoption of modern methods and gin compression would bring to the railway companies the saving of this vast sum without a dollar of investment on their part. I shall be glad to furnish detailed figures in support of this statement to those who may be interested.

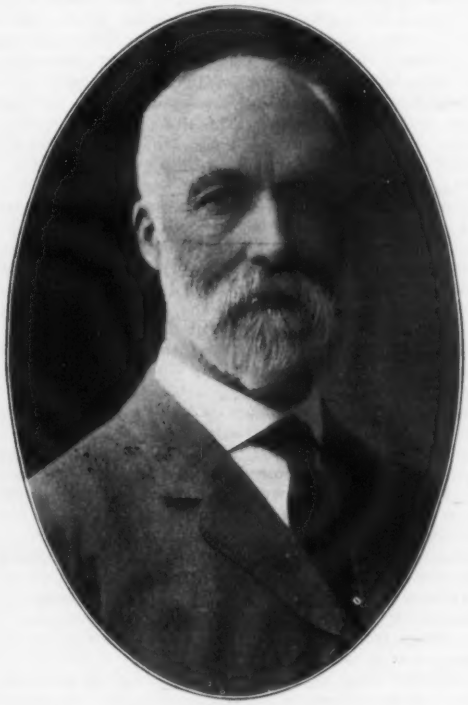
The arguments against gin compression thus far made have been fully and completely refuted by actual facts and practical experience. There is no longer a commercial or economic reason for postponing the adoption of gin compression and modern methods. The machinery of various makes are at hand and at small cost.

The spinner can bring about the needed reforms by paying the market value for the good bale and penalizing the bad bale at least for as much as the actual commercial difference in their values.

WEFT YARN INSPECTION

By Frederick H. Bishop, Secretary, Universal Winding Company, 95 South St., Boston, Mass.

The struggle which is now taking place in Europe, and which is likely to result in a re-arrangement of the frontier lines on the European Continent, must inevitably have a stimulating effect upon the cotton industry of this country. We shall be called upon to supply to the world's market the cloth and yarn which has in the past been purchased from European Continental countries, and should the struggle be protracted to such an extent as to reduce production in the Lancashire district in England, the cotton mills in this country must supply the finer cloths which have heretofore been imported from that section. In meeting this demand the quality of production, as well as economy, should have careful consideration in order that the increased production of our mills may be maintained when we are again in active competition with foreign manufacturers.



FREDERICK H. BISHOP

It is along this line that I desire to call your attention to the desirability of inspecting weft yarn, eliminating, as far as possible, the unavoidable imperfections which come through the preparatory processes culminating at the spinning frame. For many years it has been the custom among the mills producing the best qualities of cloth to inspect their warp yarn either by the use of cleaners on their winding machines, or by the inspection of the yarn at the warper, and in some instances, the use of both operations.

Within recent years the inspector of weft yarn has received considerable attention, especially in England, where so large a proportion of the weft yarn is spun on mules. This tendency has been materially increased by the introduction of machines for rewinding weft yarn, inspecting it during the winding process, and at the same time very largely increasing the quantity of yarn for delivery in the shuttle. Another thing that has contributed to the introduction of this process is the spinning of cop yarns in mills equipped wholly for this purpose, and the sale of the yarn to the weavers. The inspection of the yarn protects the spinners from criticism regarding imperfections due to the spinning process, such as lumps due to imperfect piecing of the roving, and soft places in the yarn which would not weave without breaking. As inspected yarn is wound in very compact form, there is practically no loss through the breaking down of the cops in shipment. The weavers readily pay an extra price for this inspected yarn, both for the quality and for economy of use in the shuttle, as the weavers are able to produce a much greater quantity of cloth of superior quality, and with an added loom efficiency of from 5 to 7 per cent. The waste in weaving from the inspected yarn is practically nil as against from 4 to 7 per cent. in weaving direct from cops. Under these conditions the inspection of weft yarn is becoming a very important factor among the weavers in the Lancashire district. While the conditions are materially different in this country, owing to a large percentage of weft yarn being spun on ring frames, and the fact that most of our mills are equipped for both spinning and weaving, the proposition is still worth serious consideration.

The adoption of this process of inspection by yarn mills in this country equipped for ring spinning might be of great advantage in opening new markets, enabling them to supply weaving plants with both warp and weft yarn, it being evident that the weaving mills would benefit largely through that, and at the same time fully recompense the yarn mills for the additional operation of inspection. Should this practice become general, it might naturally lead to the establishment of mills devoted exclusively to weaving,—thus obtaining the same benefits now enjoyed by the weaving mills abroad.

In the regular sequence of operations in the handling of yarn from spinning cops or bobbins for use in warps, or for other purposes than for weft, the inspecting can take place without additional handling, while the inspection of weft yarn cannot be accomplished except through the introduction of an additional operation, and the lack of efficient mechanism for winding and inspecting the yarn at one operation mechanically has in the past made the cost of inspection apparently outweigh the advantages to be secured; the use of weft yarn direct from the spinning frame becoming a confirmed habit for this reason alone, as it appears evident that where it is considered essential to eliminate imperfections from warp yarn, it should be equally desirable to improve the weft

yarn to the same extent if possible. In the endeavor to maintain this habit, it has not been possible to obtain the economic efficiency of spinning frames, as a gauge for all numbers coarser than 40 must of necessity be controlled by the shuttle capacity, thus reducing the capacity of the spinning frame and affecting the quality of the yarn. It is obvious that in the spinning of coarse numbers of weft yarn on 1 3/8-inch ring, there is not sufficient distance between the bobbin and ring to uniformly lay the twist in the yarn, and with the proper stretch, this defect being aggravated by the necessity of using a filling wind on the bobbins. Where spindles are driven at proper speed in combination with 1 3/8-inch rings and with heavy travelers, the yarn balloons and whips so much as to impair the surface quality of the yarn, the heavy pull of the traveler also having a disturbing effect between the traveler and the rolls.

In weaving cloth requiring weft yarn of coarser numbers than 36 or 40, the interior diameter of the shuttle has heretofore governed the size of the ring used in spinning; the yarn for the average shuttle of 1 1/2-inch measurement being generally spun on a 1 3/8-inch ring, while on the finer numbers the spinning ring or mule spindle has been adapted to best results in spinning without regard to shuttle carrying capacity; thus it is that of necessity a very coarse yarn is spun on a 1 3/8-inch ring, when it could be spun better and more economically on a 2 1/2-inch ring, and on the fine numbers pin cops are used in shuttles that could carry readily 300 per cent. additional yarn. This lack of harmony between the spinning and weaving departments of a mill, together with a loss of loom efficiency and the attendant imperfections and waste in weaving, is an important factor in considering the advantages of weft inspection.

In mills where advantage can be secured by spinning to the number of the yarn, instead of to the shuttle capacity, there is an increase of from 5 to 10 per cent. spindle capacity, according to the number of the yarn, and a very substantial saving in the cost of bobbins. On quite a range of numbers the spinning bobbins can be gauged to hold sufficient yarn for inspection and winding, carrying about 100 per cent. of the shuttle capacity, and without knots except such as occur from taking out imperfections. The use of inspected yarn on bobbins containing 100 per cent. more than when spun on bobbins for direct use adds at least 5 per cent. to the loom efficiency. In weaving coarse counts from spinning bobbins, a large portion of the time of the weaver is devoted to the replenishment of shuttles, and this proposition holds good up to No. 40 yarn. In regular mill practice on plain cloth, weavers can attend to 50 per cent. more looms, and at the same time secure a 5 per cent. added loom efficiency. This applies to the handling of plain looms, and not to those where the handling of the weft yarn is mechanically performed. These economies of operation more than cover the cost of inspection where they can be introduced, and are cited in justification of the process of inspection as one whereby the cloth mills weaving cotton cloth can improve their output without increasing the operative expenses of the mill.

In a paper read by J. R. Horne to the British Association of Managers of Textile Work, the cleaning of yarn is taken up in detail, and many illustrations inserted regarding the different methods in use for this purpose. He stated that he had found forty-eight different patent specifications covering various types of cleaners that have been issued since 1871, and that as far back as 1856 the process had been introduced into mills for the purpose of improving the quality of yarn. Most of the illustrations of cleaners in his paper are well-known in mill practice, and include several patented and manufactured in this country. The attention given to this matter, as evidenced by the production of so many different methods of cleaning yarn, shows plainly that the object to be attained warranted such action. Mr. Horne says, "Of course the clearing of yarns, although often combined with the process of winding or reeling, cannot be done without expense, as the production of a simple winding machine without a clearing arrangement is greater than one with clearers. This is explained by the fact that lumps and knots all pass on to the winding bobbin without any check whatever, whereas on a frame with clearers the yarn is checked or broken in its passage to the bobbin when these imperfections get to the clearer, and this temporarily stops the production. Therefore, cleared yarns must be more expensive than uncleared." The additional expense of inspecting warp yarn is incurred for the purpose of improving the quality, and no other economical result is obtained through the operation. As the winding of the yarn from spinning bobbins to spools for use in warping creels is a necessity, the application of yarn cleaners to the spoolers has not been considered an additional operation to be figured in cost, and the added expense has been included in the pay of operatives with lower production. The actual cost of inspection at the spooler averages about 25 per cent. advance of labor cost, and the use of additional spooling machines through decreased spindle speed. When yarn is inspected at the warper, the expense of inspection is substantially greater, as the time and attention of the warper tender is confined to one machine as against three on the same warps with inspection omitted.

Whenever a change in any process of manufacture is proposed, with intent to reap some economic advantage, the elimination of operation is regarded generally as being desirable if not essential, and any improvement which increases the number of operations must be of so great advantage as to offset the additional detail involved in extra handling of work or material. Perhaps this is one of the reasons why the inspection and preparation of yarn for delivery from shuttles has not kept pace in this country with the great improvement made both in the spinning of yarns and of looms for weaving. The history of the past twenty years in cotton manufacture covers great improvements in preparatory machinery and in spinning machinery, especially in ring spinning, which system today supplies so large a per cent. of the weft yarn used in this country in the cotton industry. Perhaps even greater advance has been made in the improvement of looms for in-

creasing capacity, and the adaptation of warp stop motions for improving fabric.

The economic advantages which would accrue from the system of weft yarn inspection as installed in a new mill weaving yarn coarser than 40s, and spinning with rings adapted to the yarn, would rest upon the following points:

1. Increased production of spinning spindles by 5 to 7 per cent.
2. Saving of 50 per cent. more or less on bobbins.
3. Increase of 100 per cent. in shuttle capacity.
4. Elimination of waste at the loom.
5. Loom efficiency increased by 5 per cent. weavers to handle 50 per cent. more looms with 5 per cent. gain. Thus a weaver handling twelve looms with inspected yarn, in place of eight with uninspected yarn, will secure an increase of 12.6 per cent. loom production.

While results would vary in mills on different grades of cloth, the average gain would cover expenses of inspection and repay investment in from three to five years in a mill running non-automatic looms.

From the above it will be easy to compare the relative advantages on looms constructed for automatic replenishing of weft in the shuttle, the quality of product in all cases being of primary importance.

BEAM DYEING

By John Brandwood, Managing Director, Elton Cop Dyeing Company, Bury, Eng.

The latter half of the nineteenth and the first half of the twentieth centuries will be known in history as the age of invention, for in this brief period of time, we shall have scrapped practically all the means and methods of existence that have been in vogue down the annals of time, as far back as history records.

Take, for instance, our means of locomotion. Only a little over a century ago, we were going on in the same old way as our forefathers did thousands of years ago. Today, a streak of fire (as it were) is carrying us over sea and land to the uttermost parts of the earth. Tomorrow (so to speak), a streak of lightning will carry us away through the clouds and under the sea. All down the ages, our thoughts were slow and heavy, and the methods of transporting our thoughts, slower and heavier still. Today, we may speak our thoughts to each other hundreds of miles away. Tomorrow, we shall talk to, and see each other, to the far distant parts of the earth, just as if we were face to face. For long, long ages we struggled and starved and died through want and disease; today, we are living in a world of plenty, amidst wealth and luxury. Tomorrow, famine, starvation, and disease, will be things of the past. For long, long ages, we toiled and struggled and died, because we could not produce enough. Today we are suffering because we have produced too much. Tomorrow we shall understand, and then we shall produce neither too much nor too little. Nature has had stored up, for untold ages, on the earth and in the earth, for us, and for our children, for all time, enough and to spare for all our material needs, and we are only now beginning dimly to comprehend it. Nature has all along, in song and story, shown the way. Even the little birds around us have sung the story in our ears, for so long, and we would not hear. There is no mystery, or anything strange, in all this, if only we will understand. We can, if we will. It is only this, that we are beginning to understand nature, and work in harmony with her. And as we will to understand, we shall understand, and as we do understand, we shall get closer and closer to nature. What are our submarines and aeroplanes doing but copying nature? What is our wireless but the establishment of harmonious relationships, in order to transmit our thoughts? and have not many of us proved for ourselves that "thought transference" is as real as the food we eat?

All true invention is simply following or copying nature, and compact dyeing is no exception to this rule. Only yesterday, the art of dyeing was conducted in the same way as it had been from time immemorial. As a matter of fact, the dyeing trade has been completely revolutionized every five years for the last twenty years. Perkins led the way when he showed us how to "copy nature," by restoring to us the beautiful colors nature gave us and stored away for us untold ages ago.

The great awakening now going on in the minds of the multitude has forced the pace, and will force it more and more. There can be no hesitating or going back. The multitudes are demanding and will demand better and faster colors in increasing variety. The unfolding of nature will go on. They who understand and assist in this unfolding will prosper in the best and highest sense. They who would bar the way to the unfolding will only "kick against the pricks." They will be ultimately compelled to get on or get out. Not only must we give all the best and fastest colors, but we must give them at the lowest possible cost. This is why mechanical dyeing must ultimately completely supersede the old and out-of-date methods, known as skein or chain dyeing, for, not only is mechanical dyeing the only possible way of getting perfect dyeing on a large scale, but it is the only one possible, from an economic point of view.

Harvey was the pioneer of beam dyeing, when he discovered the circulation of the blood. We cannot get any closer to nature than this. The heart pumping the blood through every fiber in the body, and the lungs oxidizing the blood and keeping it good, is a perfect analogy to the liquor pump circulating the dye liquor through every particle and fiber of the yarn on the beam, and the air pump fixing the color and making it good. And when we have got to the efficiency of the heart and lungs, we shall have got a mighty perfect apparatus. In beam dyeing, as in everything else, we cannot improve upon nature, but we are now hugging her pretty closely.

The advantages of beam dyeing are such that it must ultimately supersede every other way of coloring warp yarns on a large scale. The chief advantages may be summed up as follows:

1. The cost of beaming or dressing entirely saved, which may be anything from one-half cent per pound up to four cents per pound, according to the quality and the counts of yarn being worked.

2. The cost of dye house labor reduced to the astonishing low rate of one-tenth of a cent per pound, where the plant can be kept running fairly continuously.

3. The production from the loom increased about 10 per cent. This is because all the elasticity and the full strength of the yarn is maintained.

4. Cost of dyeing materials reduced,—especially when working with indigo, indanthrene, hydron, helindone, algole, thio-indigo, ciba, and other vat colors, which are the latest, fastest and most expensive colors at present known.

5. No streaky or uneven dyeing—perfect penetration, every particle of the fiber being equally permeated, and not plastered on the outside, as in chain dyeing. Faster and brighter colors—no broken or damaged yarn—no beaming room required, and not more than a quarter of the dye house room—easy and reliable matching of dyeings.

Any beam dyeing plant to accomplish the above results must—

1. Dye the whole set of beams of one color at one operation. For instance, where, say, six beams of indigo blue are required for a set of denims or chambrays, the whole six beams must be dyed together at one operation, and the color must be even and fast,—in short, perfect.

2. They must be equally suitable for all classes of colors, so that the same plant, with a modification of treatment, will dye equally well all classes of colors, whether vat colors, azotized and developed colors, sulphur colors, or substantive colors, and dye each class of colors as economically as it possible.

3. It must use a section beam of the usual size, that will hold 300 pounds of yarn and can be run in the warper, in the dyeing apparatus, and in the slashing frame without trouble, and one that will last indefinitely.

These conditions fulfilled, then we may say without hesitation that the final problem has been solved in dyeing warp yarns on a large scale, and that every manufacturer of colored goods on a large scale will, before long, have to adopt it, or get out of business.

I used the words "on a large scale" twice in the last sentence. This was to emphasize the fact that beam dyeing is of no service to the manufacturer who uses little colored, and a great variety of colors, in the manufacture of high-class. Take, for instance, a manufacturer of high-class shirtings. He will use a hundred colored ends, may be altogether, and several colors in a piece of cloth. Beam dyeing is of of no service to him, for he could not use a beam, or even half a beam, of one color in any cloth he makes. Here, beam dyeing is obviously not suitable or economical, but even he cannot go on in the old way. The way for him is to dye in a smaller way than the beam, viz., in the cheese or spool. Cheese dyeing offers advantages in economy of production that make it a sound business proposition. The cheeses or spools are put behind the slashing frame, and run along with the beams of grey yarn, and in this way the unnecessary labor in beaming is cut out. There is, however, nothing like the saving effected as there is in beam dyeing, for the cost of manipulation in dye house labor, dye materials and steam, is practically as great as in chain dyeing Still, the beaming is eliminated, which makes it the most economical way of producing of this kind, in which only a small minority of threads are colored.

I expect by now the colored manufacturer who reads this article will be wanting to know if it is possible and practicable for the three essential requirements given above to be embodied in any beam dyeing plant or apparatus, and, if so, if such a plant is already in existence. My reply to the above is in the affirmative. Such a plant is already at work in the States and Canada, dyeing and bleaching over a quarter of a million pounds weekly, and reaping all the advantages mentioned above, and plant is being installed for a further half million pounds weekly. Such being the case, every colored manufacturer is entitled to some little guidance as to what are the essential features in mechanical construction of such plant and apparatus, and how such results are accomplished. Let us take the section beam or dyeing cylinder, as we will call it, first. This is constructed in an ingenious way, making it equally adaptable to the warper, the dyeing apparatus, and the slashing frame. It is made from metals that are in no way affected by any chemical or dye liquors used in a dye house. It is no heavier or bulkier than an ordinary wood section beam. It holds 300 pounds of yarn, and cannot get damaged by rough handling. It lasts a life-time. It is patented in all industrial countries. This dyeing cylinder is filled in the ordinary way in the warper, but on the warper there is a simple, but reliable attachment, which enables the beam to be wound to any degree of hardness or density required for dyeing, for in beam dyeing, as in any other method of dyeing, different qualities of cotton behave differently in the dye bath, and also different colors require different treatment. Hence the need for controlling the hardness or density of the beam. The attachment mentioned not only controls the density, but ensures its being uniform throughout the beam,—so essential in beam dyeing. It is a single roller covered with special material, which assists the yarn on its warp on to the beam, by traveling at a greater surface speed than the yarn itself, or retards the yarn by traveling at a slower surface speed as may be required. An arrangement of levers and clutch ensure the roller being out of action just before the beam stops, and until just after it starts up. The speed of the roller can be readily adjusted. It is impossible to imagine any other way of accomplishing this object. The principle and apparatus is patented in all industrial countries.

The dyeing apparatus itself is unique in that it may be constructed to dye any number of beams, the general rule being to dye the full number of beams for each set at one operation. The beams all automatically find their positions in the dyeing chamber, and are not taken out until they are finished, and ready to go to the slasher. The dyeing is, of course, done in the vertical position and in a closed chamber, under pressure greater than that of the atmosphere, and the apparatus can be im-

mediately adapted so as to dye indigo, indanthrene, or any of the vat colors, azo, developed and sulphur colors, under the conditions most suitable for each dyestuff. The writer and his two brothers, who have hugged this problem pretty closely for the last twenty years, began by dyeing beams in the horizontal position.

In all compact dyeing, we are quickly compelled to recognize the axiom that no two things can occupy the same space at the same time, and the deadlock in trying to dye beams in the horizontal position is that air-pockets will form in the upper part of the beam, and cannot be got rid of. One makeshift we adopted many years ago was to rotate the beam during the dyeing operation, but it was only a makeshift, and a poor makeshift at that, for all that generally happened was that the air-pockets just stayed there,—the result being patchy, spotted and uneven dyeing. In the end, we scrapped every apparatus we had for dyeing in the horizontal position. The only right, safe and certain way is to dye in the vertical position in a closed chamber, and this principle, arrangement and apparatus is patented in all countries by three patents. Further, this arrangement enables any number of beams to be dyed at one operation, and the space required is not one-quarter of the space required for a chain dyeing plant of a similar capacity.

Another unique feature of this system is the oxidizing. As is well known, all the best and fastest colors of what are known as the vat colors, such an indigo, indanthrene, etc., and all such colors must be oxidized or fixed on the yarn by means of oxygen of air. In the earlier attempts, vacuum was utilized, but even a perfect vacuum, if it could be got, is not powerful enough for this purpose. Then air pressure was applied up the centre of the beam, and was found to be a little better, for the effective pressure was lost in its radiation outwards, and so the color was only partially fixed, and was uneven. This system is unique in that the air pressure is applied on the outside of the beam, and so the mean effective pressure is maintained all the way through the beam, and the whole set of beams are oxidized together at one operation. This principle is patented in all industrial countries, and is the only certain method of achieving results, as well as being by far the most economical. On this apparatus, raw stock can be dyed just as easy and straightforward as beams, on the same plant, and thus for the first time, raw stock can be dyed indigo, and other oxidation colors, perfectly fast and even, so that it will spin just as well as grey cotton. There is no matting or shortening of the staple. The cotton is not made harsh or rough in the dyeing. The cotton is automaticaly filled in the cylinders, which automatically empty themselves, and no hydro-extracting is required as is the case in all other systems for raw stock dyeing. The plant is also just as suitable for bleaching as dyeing. The beam dyed yarn can be quilled and a greater production ensured than by quilling from the chain.

By no means an unimportant feature is the simplicity and reliability of matching the dyeings, and the ease and regularity with which one batch of beams after another can be matched off. When it is realized that here is dyeing being conducted at last on a scientific basis, with the weight of yarn, weight of color, volume of liquor, and time of operation all under easy and absolute control, it is easy to see that matching is simple and results are sure.

This system, in my opinion, will revolutionize colored manufacturing within the next few years It may, therefore, be honestly stated that beam dyeing is at last not only possible, but practical,—not only practical, but absolutely essential,—essential now to the colored manufacturer who means to maintain his lead, essential before long to every colored manufacturer who means to keep in the running.

THE HEALTH OF THE EMPLOYE

By WILLIAM HALL COON, M. D., 92 Main St., Haverhill, Mass.

Were any employer of labor to be asked which he would prefer to employ, a well man or a sick man he would undoubtedly consider that he had been asked a nonsensical question and, if he replied at all, would probably state that he would not employ a sick person if he were aware of that person's illness.

Were the same employer asked however, "How many of your employes are in good health and able to give you their best work?" an answer might not so readily be forthcoming although in either instance the query would be much the same in intent and purpose if not in actual wording.

Still another and pertinent question might be asked. Is it advisable for you as a manufacturer to maintain a system of medical supervision over the health of your employes, and should you by chance succeed in employing only those persons in good health is it for your best interests to take measures to insure if possible the continuation of this state of good health during employment?

This last question I have asked of several employers in your industry and I have received several different sorts of replies. Some have stated that they believed that this work might be taken up with material benefit to themselves and their employes. Some have flatly said, "No, it cannot be done." Others have said substantially this: "When we have provided well-lighted, sanitary factories for our employes and have paid them the best wage consistent with the industry, we feel that our responsibility ceases and that any other work directed toward the betterment of the health or other condition of the employe should have its place without the mill and should not concern the mill management. Such a statement as the last quoted has been made to me by men for whose judgment and sagacity I have such respect that I would hesitate to set forth my personal opinion against theirs were it not that from my own experience I have become convinced that the medical supervision of employes is advisable and that it can be made an economical procedure, of advantage not only to the employer but to the employe as well. I am strengthened in my belief by the fact that the plan is now successfully carried out in certain lines of industry.

That this phase in the relation between the

employer and employe has been given thought by a former president of your Association is shown in the following quotation taken from the address of your President in September, 1912, who said at that time. "Another plan of work which is being suggested and carried into effect by some of the larger corporations is the system of resident nurses, the object being to put in each mill a competent woman who will watch closely the physical condition of the women and girls in the establishment with the idea of advising them how to live wisely. It would probably not only pay the corporation from a money point of view but will undoubtedly enable the corporation to perform a duty which perhaps many of us have overlooked."

I feel that it is almost unnecessary for me to do more than mention in passing the good that is to be had through an observance of the principles of factory sanitation, for to a manufacturer who fails to recognize and follow out these principles any appeal directed toward the betterment of the health of employes must be made in vain. It is highly probable that today the greater number of manufacturers recognize the advantages that come through the maintenance of clean, well-lighted, sanitary factories in which the comfort of the employe is carefully looked after. People work better under conditions of good light and cleanliness and it has been found that more and better goods are produced in factories where such conditions obtain than in similar establishments where work is carried on under lower standards of sanitation. So well are these facts recognized that modern factories are designed so as to utilize to the best possible advantage all available lighting areas, and to provide for every modern appliance of mill sanitation. All this, however, is not done because of sentiment but for the very good reason that it pays, and pays well.

It would also pay it seems, to people these factories with employes in good health capable of giving their best efforts through each working hour of the day and to provide for their continuance in good health by a carefully planned and carefully carried out system of medical examinations and inspection.

In giving my reasons in support of this belief, I wish it to be clearly understood that it is no purpose of this communication to associate conditions of ill-health in employes with the process of manufacturing cotton. Your industry, in this country, gives employment to approximately 500,000 persons and the natural occurrence of disease among this number of people would be sufficient cause for you to employ methods of medical supervision without reference to any hazards the industry may or may not possess.

Statistics on the causes of mortality among cotton operatives have been collected and published and have been used as the basis of criticism directed against you, but I cannot find that your Association or any other association of the textile industry in this country has so far concerned itself as to gather accurate information concerning the vital statistics of that very important factor in your scheme of production, your employe. You have ample and carefully collected data relating to other details of your business, but you have passed by a field which might well be cultivated with profit, and have left for others the collection of facts concerning a subject with which through your own efforts and out of your own experience you could be fully and accurately informed.

Neither is it my purpose to outline or discuss in this paper any phase of the so-called welfare movement directed toward the betterment of conditions under which persons labor and live. I wish solely to point out to you why you can interest yourselves in the health of your employes to your own advantage and to the advantage of the people working for you.

The delay in the recognition of ill-health and the causes of ill-health among working people is due to several causes. Among these causes are:

a. The lack of sufficient appreciation on the part of business men of the health of employes as a factor in industrial efficiency.

b. The absence of a systematic supervision of the health of employes while at work.

c. A lack of knowledge on the part of employes concerning the maintenance of their health, and the prevention of disease.

That the average manufacturer has failed, apparently, to consider the health of his employes a factor in the efficiency of his business, is shown when the conditions prevailing in the average factory is considered. A manufacturer builds his mill with due regard to economy of space and places in it machines designed to produce at the lowest possible cost the materials for which they are intended. That these machines may be kept at the highest point of efficiency a force of mechanics is maintained who quickly adjust any irregularity in their action that work may go on as far as possible without interruption. For the work of the machine carefully selected material the product of other machines, is prepared, and then, when all is ready the machine is useless unless there is some one at hand who is skilled in its use. And this some one must constantly watch the machine to see that it does its work properly and to remove from it the finished product. The employe in charge of the machine must be alert and on the watch for broken ends or imperfections, correcting each fault as it comes to his notice when it is possible for him to do so.

In other words the efficiency of any machine rests upon the efficiency of the person operating it. You can speed a machine to its limit, but the material passing through will suffer if the person in charge is careless or inattentive, and time will be lost even though the imperfections in material may later be removed or repaired. This carelessness or inattention of the employe may be due to causes over which you can have no control and which no amount of work on your part could remove or anticipate. On the other hand, this carelessness or apparent inattention may be due to causes which you can remedy when you have found their cause.

Many instances have come within my personal notice in which the need for the medical supervision of employes was made apparent. The following instance illustrates what might have been avoided had a system of medical examination been

in force in one cotton mill. In a certain mill where cotton cloth was made there worked at one time side by side three girls. These girls are now dead and the death certificate of each was signed "tuberculosis." It appears that while two of the girls were in good health there came to work beside them a third who was not well and had a cough, but who was not so ill but that she could manage in some way to get through her day's work. This girl continued at her employment for some months and then left her work, dying from consumption shortly afterward. It was not long before the two girls who had worked beside her showed symptoms of the disease, and were eventually obliged to leave their work. Both of these girls died of consumption undoubtedly contracted from the girl who had the disease when she entered the mill. How many others there were who were also infected there is no way of knowing but it is not at all improbable that other persons were infected from this source.

These three girls were at the times they were obliged to leave their work, trained employes in a process requiring a considerable deftness of hand and quickness and accuracy of sight. To fill their places other employes had to be secured and taught to do the work. All this took time, and for the while the work at hand had to suffer until the new employes had become as proficient in the work as those who had left because of sickness. I will not attempt to estimate the monetary loss to the mill or to the community because of the loss of these workers. Those who have studied the monetary value of the worker in early adult life place this loss at a high figure, and no account is taken of grief, suffering or family loss, although when these enter our own experience they are by no means a negligible quantity.

The fact that these girls died from a preventable disease may not concern you, but the fact that two of the girls developed the disease in the mill and that through loss in efficiency and death the mill suffered a financial loss, must concern you.

That the situation just described may present itself in any mill or factory, may be understood by giving attention to the situation relative to tuberculosis in a state where registration statistics are available.

In the ten years, 1900-1909, about 64,000 persons died from tuberculosis in Massachusetts, and at the present time tuberculosis in all its forms causes about one-ninth of all the deaths in the state. The disease prevails in young adults and seems to associate itself with those who have failed to recognize and adopt the better standards of living.

It has been estimated that there are at present some 35,000 persons in Massachusetts ill with the disease.

Tuberculosis however by no means represents the only cause of ill health possible in employes. Other organic diseases and physical defects are present in the mill employe as well as in the mass of people at large and correspondingly affects his capacity for work. Physical defects increase materially the hazards involved in any occupation. An epileptic in one of his seizures is liable to fall into moving machinery; an employe with a hernia may aggravate this affliction through strains in lifting. The employe with disease of the heart is susceptible to heat, exposure or sudden exertion. Employes suffering from varicose veins may develop varicose ulcers or infections through slight abrasions, and a deaf employe is particularly liable to accident. Defects in eyesight or partial blindness may become total blindness from an accident to the good eye. Contagious diseases may spread from one employe to another.

Another cause for the examination of employes lies in the situation now arising out of the Workmen's Compensation Laws. These laws have considerably increased the value of physical examinations because of the removal of the employe's responsibility for the accident, and the inclusion under the law of diseases both of an occupational type and of acute types that may develop from physical exposure during employment. In Massachusetts the Industrial Accident Board has defined as a "personal injury," "Any injury or damage or harm or disease which arises out and in the course of the employment which causes incapacity for work and takes from the employe his ability to earn wages."

This definition of "personal injury" has been upheld in a decision sent down by the Supreme Judicial Court in the case of Johnson vs. London Guarantee and Accident Company, Ltd. In this instance an employe, seventy-two years of age, a paint grinder by occupation, became unable to withstand the influence of the poison due to lead constantly introduced into his system, the result leading to his inability to work. Here it was held by the court "Under the act 'personal injury' is not limited to injuries caused by external violence, physical force, or as the result of accident in the sense in which that word is commonly used and understood but under the statute is to be given a much broader and more liberal meaning."

This decision is wide reaching in its importance, for although in this instance the injury arose from the effects of a mineral poison, it was nevertheless the result of the employe's occupation on his bodily health.

Similar opinions have been handed down by the Industrial Accident Board of Massachusetts, some of which have been appealed to the Supreme Judicial Court, while others have been uncontested.

In the case of Black vs. Travelers' Insurance Company adjudicated by a committee of arbitration, an employe in a furniture factory received an injury to his ankle which arose out of and in the course of his employment. Some time later he became incapacitated for work, and three months from the time of his injury died of tubercular meningitis. It was held that the injury was a predisposing cause of the disease, and the widow was allowed compensation for a period of three hundred weeks at a rate of $8.25 per week.

Two facts showing the importance of the medical examination of employes appear in this case. In the testimony before the committee it was shown that some two years before the date of the injury, the man had suffered from a condition generally associated with tuberculosis. It was also shown that the injury, a fracture at the ankle, was neglected by the patient as he appeared not to

recognize its nature, and that for two weeks after the injury he continued at his work until compelled to quit because of pain.

Under a proper system of examination of employes such an occurrence as that noted should have been prevented. The injury perhaps could not have been foreseen, but had the man been a sufferer from tuberculosis his condition would have been known, and he would probably have been placed under suitable treatment outside the factory. With a competent physician at hand the injury to his ankle would not have gone unrecognized for two weeks.

For an injury to the ankle received by a young woman while at work in a cotton mill, and which resulted in a tubercular affection, compensation for total incapacity for work has been awarded in a recent case settled by an arbitration board. This case was not further contested after the award was made.

Compensation has been awarded by a committee of arbitration for pneumonia resulting from colds and exposure, arising out of and in the course of employment.

In the case of Herrick vs. Employers' Liability Assurance Corporation, Ltd., compensation was awarded because of the death of an employe from strangulated hernia following an injury arising out of and in the course of employment. In this case it appears that the employe, a heavy man, had a fall on December 18, and on January 25, had another fall. On January 26, the employe was treated for acute indigestion, and remained home for a week or ten days and then returned to his employment and worked for two weeks or more, calling a physician on February 14, who afterward found a hernia on March 3 or 4. In this instance had a system of medical examination been in force in the factory in which the man was hurt, the injury which afterward resulted in his death might have been discovered and suitable treatment given.

In the case of Hurle vs. American Mutual Liability Insurance Company, compensation to the amount of $3,952 was awarded, because of total incapacity for work caused by loss of vision.

In this instance the employe's loss of vision was attributed to certain noxious gases which caused degenerative changes in the optic nerve.

Here again it would seem, an efficient system of medical inspection and examination would have anticipated the loss of sight.

In each of the cases quoted one question comes to mind. What was the physical condition of the employe before he became ill or was injured?

Because of the interpretation which has been placed upon the meaning of "personal injury" if for no other reason, it would seem not only practicable but necessary that an employer should know the state of health of each of his employes. An initial physical examination at the time of employment or periodic examinations during employment would undoubtedly serve to prevent certain diseases and various types of accidents by affording the employer the warning of the employe's weakness. This procedure would undoubtedly minimize accident hazards, and where there existed a latent diseased condition would prevent the condition from becoming acute.

Such an examination would also serve to prevent the infection of one employe by another. The liability of the employer for such a type of injury is suggested in the case of Hood vs. Maryland Casualty Company, 206 Mass. 223. This was a suit by an insured against the insurance company under a policy which was to insure the plaintiff against any accident suffered by an employe "in and during" the operation of the trade or business described in the policy. An employe contracted glanders while working in a stable which had been occupied by horses which had glanders. He sued the present plaintiff and recovered; the plaintiff sought reimbursement under the policy. The court held that the accident came within the policy.

If any member or group of members of your Association should consider it practicable to establish a system of medical supervision the following results might be reasonably looked for.

a. The health of the working force of the factory would be protected by the elimination of sources of infection.

b. The physical deterioration of employes would be prevented by the early detection of disease and the immediate institution of measures directed toward treatment.

c. Unnecessary financial loss to the employer should be prevented through the recognition of any slow growing reduction of the working power of employes through disease.

d. Personal injuries should be prevented through a knowledge of an employe's weakness to any hazard.

e. A higher standard of the entire working force might be achieved through a system of individual and general instruction having as its object the increase of the resisting power of employes below grade and the preservation of health of those below normal condition.

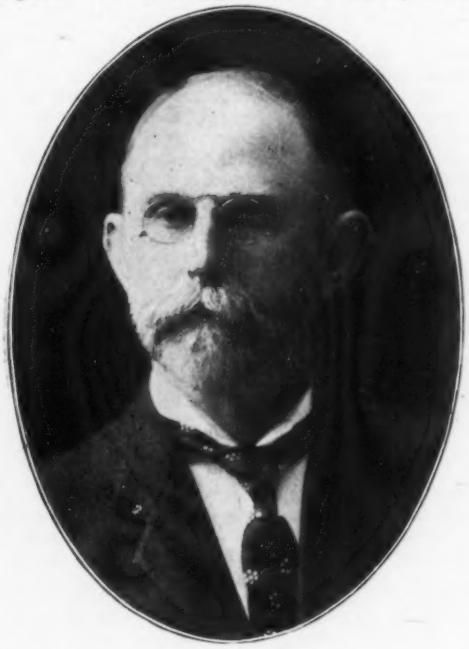
The establishment of a system of medical examination and supervision in your factories presents no difficulties not easily overcome. Any such plan, however, should be carefully worked out with reference to the needs of each establishment or groups of establishments, for several small factories in a community might combine in the work to good advantage. Too much should not be attempted at first, the change has been slow in coming and time should be taken to work out details carefully under the direction of a competent person. The work should result not only in a betterment of the health of the employe but also in a better understanding between the employe and his employer. The work should also pay in dollars and cents because an establishment in which the standard of health is high should command a better insurance risk than one in which the standard is poor or indifferent. I have had it stated to me by an official of one of the largest liability insurance companies doing business in Massachusetts that there should be no expense connected with a well thought out and carefully conducted system of medical examination in any factory, because such a system would undoubtedly pay for itself in the reduced cost of insurance given to such an establishment.

The reasons for the medical examinations of employes as outlined in this communication while addressed to you as cotton manufacturers have equal reference to conditions in any establishment in which people are gathered together under the factory system.

SOURCES OF POWER

By FRANCIS W. DEAN, 53 State St., Boston, Mass.

The main sources of power, at the present time, are steam, gas, oil and falling water. For steam and gas engines coal is the main fuel, in the former case to be burnt under boilers for generating steam and in the latter for conversion into gas for direct use in the engine cylinders. Oil is used for fuel under boilers, but it can be used with far greater efficiency directly within the cylinders of engines, where, if mixed with the proper quantity of air, it can be burned rapidly, or exploded. In this way it produces a gas under high pressure, which by its expansive force is capable of pushing a piston. Oil engines are thus practically gas engines in which the gas is made rapidly or instantaneously in the cylinders. Kerosene and gasolene engines are familiar instances of refined oil for power purposes.



FRANCIS W. DEAN

Gas for engines can be illuminating or natural gas, but in general it is "producer" gas, a producer being an apparatus which produces an explosive gas by partially burning coal. The gas thus made is conveyed directly to the engine from the producer, and not stored in a gasometer. Any kind of coal can be used, although the tar which is formed from some kinds, as the gas is made, is troublesome. Wood is used for producing gas where it is plentiful and where coal is expensive. In the United States fine anthracite coal is preferred. In iron works where blast furnaces are used for making iron from ore, a great quantity of combustible or explosive gas is generated. This was formerly burnt under boilers for making steam for driving the engines which blow air into the blast furnaces, and for other purposes. Now, however, the gas is conducted to gas engines and exploded directly in the engine cylinders. In this way the gas is much more efficiently used than when burned under boilers. In mills where pig iron is made and worked into steel products, there is enough gas produced as a by-product to drive not only the blowing engines for the blast furnaces, but the power engines as well. Engines suitable for using blast furnace gas were first developed and used in Germany some twenty years ago. They were quickly introduced elsewhere, and the use of steam engines at blast furnaces has passed, and great economy in fuel and labor has resulted.

Oil engines have been used in many small sizes for many years, but some twenty years ago the late Dr. Rudolf Diesel, of Munich after many experiments, brought into practical shape an engine which was entirely novel, and which was capable of using not only gas and high grade oil, but also crude oil and tar products for fuel. This engine languished for a number of years, but it has recently been revived and used for propelling ships as well as for land use. It is not a true explosion engine but rather a rapid internal combustion engine as the fuel is injected at the right time and burns while entering the cylinder. It is capable of using crude oil such as that found in Texas and Mexico.

The advantages of the Diesel engine for moderate sized ships are great. As compared with coal and steam, oil, weight for weight, occupies about 88 per cent. of the space required by coal and the calorific value is about 40 per cent. greater, while the relative efficiencies of steam and oil engines are ordinarily as 10 to 25. The thermal efficiency of the Diesel engine may reach 36 per cent. As such engines require no boilers nor boiler room attendance, are much more efficient than steam engines, and as oil occupies less space than the equivalent coal, it is evident that the cargo carrying capacity of ships is augmented by their use, and the cost of operation reduced. It is hardly practicable to use oil engines in very large and high powered ships, at least hardly advisable, on account of the small size of the engines practicable. It is estimated that in some of the largest ships now afloat as many as 250 cylinders, or engines, would be required to generate the necessary power, and that the aggregate length of these engines would be about 1,200 feet.

For naval uses oil is of great value and all nations are desirous of using it in their navies.

It is not always necessary to explode a gas or burn oil in a cylinder and drive a piston in order to apply power. In the Humphrey's pumping engine now used in England, somewhat, the gas is exploded directly on the surface of the water which is to be raised into a reservoir. It consists in the main of a pipe terminating in a combustion chamber at one end and in an outlet to the reservoir at the other, with suction valves around the surface of a part of the pipe which is laid in the source of water supply. After an explosion, the first surge sends water to the reservoir, the first return surge forces out the burnt gas, a second outward surge draws in fresh gas, and a second return surge compresses it, when it is fired. Sev-

eral engines of this type are in use pumping the whole flow of the river Lea into one of the reservoirs of the London water works with unequalled economy.

Oil engines are more expensive in first cost than steam engines and boilers combined, but for the reasons already given they will, in many cases, supersede steam engines. For land use they can never displace steam engines where steam is needed for various other purposes than power, especially if exhaust steam can be used, as the most economical engine is the steam engine from which the exhaust steam is utilized.

While all of the deposits of oil over the world are unknown it is hardly probable that the duration of its supply will equal that of coal. I believe that it has been estimated that the yield of oil in California is likely to last one hundred years.

In a paper read before the Royal Society of Arts in London, by Dr. F. M. Perkin on The Oil Resources of the Empire, it appears that the only commercial source of oil in Great Britain is Scottish oil shale, that about 23 gallons can be distilled from one ton of shale, that the total quantity of shale mined has increased from 2,690,028 tons in 1907 to 3,116,803 tons in 1913, and that the present annual yield of crude oil therefrom is about 275,000 tons of 2,240 pounds each. Oil is also found in Canada, Australia, India, Trinidad, and slightly in other British possessions. The total yield, however, of the British Empire is comparatively small, and of great disadvantage to Great Britain. It is given by Dr. Perkin as follows, per annum at present:

India	tons	1,000,000
Scotland		275,000
Canada		32,000
Trinidad		35,000
New South Wales		7,500
Other sources about		10,000
	tons	1,359,500

or about 11,000,000 barrels of 42 United States gallons each.

The insignificance of this is apparent from the yields of the various states of the United States, which in 1912 were as follows:

California	bbls.	86,450,767
Oklahoma		51,427,071
Illinois		28,601,308
West Virginia		12,128,962
Texas		11,735,057
Louisiana		9,263,439
Ohio and Michigan		8,969,007
Pennsylvania		7,837,948
Kansas		1,592,796
Wyoming		1,572,306
Indiana		970,009
New York		874,128
Kentucky		484,368
Colorado		206,052
	bbls.	222,113,218

The value of this oil was about $164,000,000. The production in other countries in 1912, outside of the United States and the British Empire, was as follows:

Russia	bbls.	68,019,208
Mexico		16,558,215
Dutch East Indies		10,845,624
Roumania		12,991,913
Galicia		8,535,174
Japan		1,671,405
Peru		1,751,143
Germany		995,764
Italy		86,286
Other		250,000
	bbls.	121,704,732

In Africa and South America, outside of Peru, which yields as given above, there are indications of oil in various places.

Coal as a source of power, is, as everybody knows, the main reliance of the world, and the steam engine worked with steam from coal fired boilers is the standard of the world, with which every other source is compared for quantity and economy. The production of coal every tenth year in the United States, and the magnitude of the quantities in recent years is shown in the following table:

Year	Tons of 2,000 lbs.
1814	22
1820	3,450
1830	320,072
1840	2,070,039
1850	7,018,181
1860	14,610,042
1870	33,035,580
1880	71,481,570
1890	157,770,963
1900	269,684,027
1910	501,596,378
1912	534,466,580

The following table shows the quantities mined in 1912 in the different states in their order of magnitude:

State or Territory	Tons of 2,000 lbs.
Pennsylvania	246,226,086
West Virginia	66,786,687
Illinois	59,885,226
Ohio	34,528,727
Kentucky	16,490,521
Alabama	16,100,600
Indiana	15,285,718
Colorado	10,977,824
Virginia	7,846,638
Wyoming	7,368,124
Iowa	7,289,529
Kansas	6,986,182
Tennessee	6,473,228
Maryland	4,964,038
Missouri	4,339,856
Oklahoma	3,675,418
New Mexico	3,536,824
Washington	3,360,932
Montana	3,048,495
Utah	3,016,149
Texas	2,188,612
Arkansas	2,100,819

Michigan	1,206,230
North Dakota	499,480
Georgia and North Carolina	227,703
Oregon	41,637
California and Alaska	11,333
Idaho and Nevada	2,964

In Great Britain and Ireland the production of coal has been at the following rates every tenth year beginning in 1850.

Year	Tons of 2,240 lbs.
1850	49,000,000
1860	82,000,000
1870	110,000,000
1880	147,000,000
1889	177,000,000
1900	225,200,000
1907	267,800,000

This table in connection with that of production in this country shows that our production equaled that of the United Kingdom before 1900, and at the present time is about twice as much.

The production of the principal countries of the world outside of the United States and the United Kingdom were as follows in the years named, in millions of tons of 2,240 pounds per annum:

	1850	1860	1870	1880	1889	1900	1907
France	4.4	8.3	13.3	19.4	24.6	32.2	35.5
Germany	6.7	16.7	34.0	59.1	84.9	107.5	140.9
Russian Empire						15.9	21.0
Belgium	5.8	9.6	13.7	16.9	19.8	23.1	23.3
Austria	2.0	3.5	9.5	16.1	24.0	10.8	13.6
Spain						2.5	3.6
Canada						5.2	9.4
Australia						6.4	9.7
India						6.1	11.2
Japan						7.4	13.7
Various	5.5	7.0	9.0	11.0	12.7		

It is very little use to speculate as to the amount and duration of the present coal deposits, but in 1905 it was estimated that the quantity of coal remaining in the proved fields of Great Britain and Ireland at depths less than 4,000 feet, was about 191,000,000,000 tons, in the unproved fields 41,000,000,000 tons, and at depths below 4,000 feet in the proved fields over 5,000,000,000 of tons. In 1900 it was estimated that the coal in England and some parts of the continent of Europe would last from 100 to 200 years, in some other parts of the continent 250 years, and in still others 600 to 800 years.

Without giving a definition of a unit of heat, the amount of heat thus designated which the complete combustion of a pound of coal under ideal conditions will generate, can be obtained in an apparatus constructed for the purpose. When coal is burned in a boiler it is possible to ascertain how much heat is absorbed by the water, and the steam generated in the boiler, and the proportion of this to that which the coal would generate under the ideal conditions referred to, is called the efficiency of the boiler. This is commonly about 70 per cent., but can be as much as 80 per cent. and even somewhat more. The remainder of the heat is made up of that required to heat the air which is drawn into the fire to support combustion, to heat, vaporize, and superheat the moisture in this air, and in the fuel, and to supply the heat lost by radiation and that which passes up chimney. Of the heat which the steam contains, only 10 to somewhat more than 20 per cent. can be reclaimed in a steam engine as useful work, depending upon the design of the engine, thus making the efficiency in the use of the heat in the coal with boilers and engines combined from 7 per cent. to 16 per cent.

Years ago mills were built on water power sites because of the water power. With the advent of the steam engine water power became of less importance, and in many cases if the mills had been built after steam engines and boilers had reached considerable efficiency the water power would have been utilized. Water power has several disadvantages when it is developed to the advisable amount in any case. The quantity of water varies greatly during the year, and some years are dryer than others. In extreme cases the water fails almost completely in the dry months. Only a few years ago the Connecticut river became practically dry. The result of this variation in the flow of water from month to month and year to year is to make it necessary to install steam plants, if steady powers are to be maintained. There are few if any industrial plants that can afford to run with a variable capacity, or with a capacity below the normal, and therefore in a fully developed water power a make-up steam plant is necessary. Since it not infrequently happens that the flow of water almost ceases, and sometimes does absolutely, it is apparent that a full power steam plant is a necessary accompaniment of a water power plant. Some figures from the flow of the Sudbury river in Massachusetts will illustrate the variation. These figures are the average yields in cubic feet per second per square mile of water shed for thirty-seven years arranged month by month in the order of wetness.

Yield in Cubic Feet Per Second Per Square Mile of Water Shed

Dryest month	0.137
Second dryest month	0.232
Third dryest month	0.386
Fourth dryest month	0.546
Fifth dryest month	0.707
Sixth dryest month	0.929
Seventh dryest month	1.156
Eighth dryest month	1.574
Ninth dryest month	2.188
Tenth dryest month	2.746
Eleventh dryest month	3.518
Wettest month	4.776

It will be seen from this table that the yield of the Sudbury river in the dryest month of the average years is less than 3 per cent. of that of the wettest month. Furthermore, when it is considered that in the period of thirty-seven years mentioned there were many months when more water evaporated from the river than flowed into it from the watershed, and that in some other months the yield was almost double the maximum given in the table, it will readily be seen that water power does not appear so valuable to the engineer as it does to the layman. In the de-

velopments of Niagara Falls, the Mississippi river at Keokuk and at many other places the powers are so large that it will be a long time before the minimum is used. Until that time comes these can be called unfailing water powers. Nevertheless, in most cases except at Niagara, which for scenic reasons will probably never be developed to the minimum flow, the time will come when the powers will fail, and make-up steam power will be necessary. When this time arrives the cost of the water power will increase.

Peat burns with a clear flame, makes a hot and responsive fire, produces no smoke or soot, a small amount of ash and no clinkers. It kindles easily, will keep alive when shut up without a supply of air, due to self-contained oxygen, will immediately burst into flame when urged, and for house use in open fires is said to be an ideal fuel

Gas can be made from peat by the producer process for driving gas engines, and this is being done in Europe where there are several large electric power plants driven by peat gas engines. While producer gas from anthracite coal contains 144 units of heat per cubic foot, from bituminous coal 156, that from peat contains from 132 to 175. From this it appears that the gas from peat is as rich as that from coal.

A source of power that has led to considerable speculation is the sun. Some particulars of a sun engine were given recently in papers read in England. Pratically unlimited power comes from the sun to the earth, but its utilization is a difficult thing and is only possible in parts of the world where there is constant sunshine for long periods. In Philadelphia 32 h. p. were developed at midday, and 14 h. p. throughout eight hours of the day. At Meadi, Egypt, a 50 h. p. sun plant was recently built with parabolic mirrors for reflecting the sun's heat to a boiler. These mirrors aggregate about 14 feet in width and 205 feet in length, and are made to follow the sun by suitable mechanism. It is necessary to keep mirrors free from dust. With coal at £3 per ton there was a saving of £410 per annum compared with a coal plant, although the cost of the sun plant was £790 more than that of an equivalent coal plant. It is obvious that the sun plant is applicable only for small powers and only where the sun is constant and bright and coal is expensive.

"Engineering" in an article on Energy from the Sun, states that the sun sends 7,000 h. p. to the earth per acre, but that losses diminish this to 1,750 h. p., and even this cannot be realized. In fact at Meadi, trials of over three weeks duration, although the area of the sunshine-absorbing plant covered about seven-eighths of an acre, showed the highest output to be 19.1 h. p. At Philadelphia 0.41 of an acre gave an average of 18.54 h. p. during five hours.

The wind is another source of power which is convenient in places, but commercially is of no importance. A windmill 40 feet in diameter will sometimes give out 8 h. p. and costs several times as much as an equivalent steam plant.

When the various fuels that have been considered are nearing exhaustion, what is often called an unfailing supply can be obtained, namely, alcohol, which can be made from almost any kind of vegetable growth. For automobiles this kind of fuel is likely to be used in the near future.

THE IMPORTANCE OF THE PINK BOLL WORM

By W. D. HUNTER, A Member of the Federal Horticultural Board, Washington, D. C.

In all cotton-producing countries insects constitute one of the most serious obstacles with which the planters are forced to contend. The best example is the cotton boll weevil of this country, which has been advancing from the Mexican border at the rate of about fifty miles per year. The annual loss now amounts to about $20,000,000, and this is likely to increase as the infested territory becomes larger. The drain on the cotton industry which has been caused by this insect has

W. D. HUNTER

resulted in the passage of numerous control laws and the expenditure of large funds by the Federal and State governments. Despite all of the efforts that have been made against the insect there are certain regions where it has caused cotton culture to be practically impossible. In fact, the insect is undoubtedly one of the most important factors to be considered in connection with cotton culture in the United States. The boll weevil is not a native of the United States but came into this country from Mexico. The tremendous losses which have occurred would have been prevented if it had been possible to prevent the invasion of Texas in the early 90s.

Among the important enemies of the cotton plant, which do not occur in this country, is the so-called pink boll worm, which, for many years, has been the principal insect enemy of the plant in certain oriental regions. More recently it has been introduced into Egypt, where, in the course of about five years, it became more important than any of the native pests. On account of the

method of development of the pink boll worm it is especially liable to artificial introduction. In one stage it is found in the hulls of cotton seed, from which it has devoured the kernel. From experiments performed in the Ministry of Agriculture in Egypt it was found that the hulls may retain the living insects for as long as seven months, and from experiments which have been conducted in this country with infested seed received from Egypt through London it is evident that even a longer period may be passed by the insect in the seed. On account of this fact it is evident that the pink boll worm might be shipped from Egypt or elsewhere in considerable numbers and arrive in remote quarters of the earth in a living condition. As a matter of fact, several shipments of cotton seed from Egypt which have arrived in this country have been found to contain the living insects.

As soon as the danger of the introduction of the pink boll worm into this country through seed from foreign countries became evident, the Federal Horticultural Board promulgated a quarantine against cotton seed under which a number of shipments have been intercepted. The protection of the cotton industry of this country against the pink boll worm and other foreign insects through this quarantine seemed to be complete until it was discovered that a considerable number of infested seeds come to the United States in bales of lint. In the examination of the picker waste from thirty-seven bales of Egyptian cotton, for instance, it was found that an average of 215 seeds per bale occurred. Contrary to expectations, it was found that most of these seeds had not been crushed in the process of baling the lint, and several of these seeds have been found to contain living pink boll worms. Since a considerable amount of Egyptian cotton is sent to mills in the southern part of the United States, many of which have cotton fields in the immediate vicinity, it is evident that the protection of the industry will not be complete until some means is devised for eliminating or greatly reducing the danger from infested seeds in lint.

The Federal Horticultural Board is considering the question of adequate protection of the producers from all standpoints. There are many difficulties to be overcome. Among the suggestions that have been or are being considered are the restriction of the use of foreign cotton to northern mills, the heating and refrigeration of bales before they are shipped to the South, the inducing of foreign governments to devise means of eliminating all seeds from the lint in the process of ginning, and the careful destruction of the trash obtained in cleaning the lint. A number of experiments to determine the practicability of destroying the pink boll worm in bales by the use of heat have been conducted, and are reported upon in another connection. Additional experiments with heat and other means of control are under way.

In all this work the Federal Horticultural Board has received the earnest and intelligent cooperation of this Association, whose Secretary has been particularly active in assisting the Board.

Recent events which have the effect of cutting off the supply of foreign cotton give time for exhaustive experiments and full consideration of the effects on business of any control measures that may be suggested. The Board will continue to give this matter careful attention, and hopes that some means will be found to safeguard the interests of producers in this country, and, at the same time, to cause the least possible loss or inconvenience to the spinners and handlers of imported cotton.

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THE EFFECT OF STRUCTURE ON THE STRENGTH AND WEARING QUALITIES OF CLOTH

By WILLIAM MYERS, M. Sc., Tech., Chief Lecturer in Textiles, Municipal School of Technology, Manchester, England

In a previous paper read before this Association, the results of a number of tests were given, with the object of determining whether or not there was any relation between the strength of single threads and the collective strength of a given number of the same threads when woven into a texture.

It has been thought that if such a relationship exists, and could be established with a reasonable degree of certainty, that the information thus obtained would be of service to the industry in the building of cloths.

One object of these investigations is to bring before this Association the results of a large number of tests which have recently been made and to show what relation appears to exist between single and collective breaks.

Five series of cloths have been woven and tested, as follows:

Series I. Thirteen samples with 60 ends per inch of 34s warp, with various picks and counts of weft, all plain.

Series II. Twelve samples with 84 ends per inch of 34s warp, with various picks and counts of weft, all plain.

Series III. Twelve samples with 64 ends per inch of 2/34s warp, with various picks and counts of weft, plain, 3 by 1 twill, and 2 by 2 twill.

Series IV. Twenty-seven samples made from 34s warp in 80, 76, and 72 reeds respectively, with various picks and counts of weft, all plain.

Fifty single thread tests have been made from the warp and weft threads of each sample, and from the first three series, six cloth tests in the direction of the warp and six in the direction of the weft have been made, while from the remaining two series, ten cloth tests have been made in each direction, and ten from the cloth when cut on the "cross." From these tests the following figures and tables have been constructed.

The grand mean single thread break of 650 threads of 34s taken from the cloth equals 9.976 ounces, while the grand mean single thread calculated from the cloth breaks, based on thirteen samples 2 inches wide, equals 10.22 ounces. From this it will be seen that the average increase in the strength of the warp due to the formation of a cloth equals (10.22 × 100) — 9.976 equals 102.4, therefore 2.4 per cent. increase, practically 2 1/2 per cent. increase.

This is one of the figures sought after in an investigation of this kind, and one which should eventually be of great value to the manufacturer. The figure appears to be a simple one, but quite

a number of tests and estimations have had to be made to arrive at it.

The effect of varying the number of picks and the counts of weft on the strength of the cloth in the direction of the weft may now be considered. The same number of tests have been taken of the weft as of the warp, but seeing that a good many changes have been made in the number of picks and the counts of the weft, one would naturally expect to find varied results, and such is the case as may be observed from Table 1.

In the column dealing with the 20s weft it will be observed that, taking the calculated mean strength of a single thread from the cloth breaks, that there is a consistent increase in the thread

Series II. In conducting these tests a similar number of threads were broken from each cloth, namely, 600 tests of warp and 600 tests of weft and six cloth tests of warp and six of weft, in 2-inch and 4-inch wide, making 288 tests from the cloth.

The grand mean single thread break of 34s taken from the cloth equals 9.69 ounces, while the grand mean single thread break (calculated) from the cloth breaks, based on twelve samples each containing 168 threads equals 9.885 ounces, and from 336 threads equals 9.36 ounces. From these figures it is calculated that the average increase in the strength of the warp due to the formation of a cloth equals (9.885 × 100) — 8.69, therefore,

Picks.	16s. Weft.			20s. Weft.			30s. Weft.			40s. Weft.		
	Grand Mean Single Thread.	Calculated 2"	+ Per Cent	Calculated 2"	Grand Mean Single Thread.	+ Per Cent.	Grand Mean Single Thread.	Calculated. 2"	+ Per Cent.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.
	Ounces	Ounces		Ounces	Ounces		Ounces	Ounces		Ounces	Ounces	
40	19.03	*	*	9.78	11.2	14.0	9.12	10.00	10.00	7.58	8.65	14.0
44	19.03	19.80	4.0	9.78	12.9	31.5	9.12	9.50	4.00	7.58	8.50	12.0
52	19.03	22.50	19.0	9.78	13.6	39.0	9.12	10.70	17.00	7.58	*	*
56	19.03	*	*	9.78	14.1	44.0	9.12	11.65	28.00	7.58	8.45	12.0
Grand Mean	19.03	21.15	11.5	9.78	12.9	32.1	9.12	10.46	14.75	7.58	8.53	12.6

*No cloth available.

TABLE I

strength coincident with increase of the number of the picks per inch thus:

Picks,	40	44	52	56
Mean standard Troy ounces,	11.2	12.9	13.6	14.1

It would appear from this that as the threads are closer they support each other to a greater extent, as might be anticipated.

The results of the experiments with the 30s weft are also shown at Table 1, and while the figures are not quite so consistent as in the 20s weft, the following figures appear to justify the statement just made:

Picks,	44	52	56
Mean standard Troy ounces,	9.9	10.7	11.65

In the 40s weft it would appear as though the limit of useful increase has been passed, although there is still an increase observable. It might be right to suggest that an equally consistent increase would be obtained by using wefts of, say, 24s, 26s, and 28s, with the picks used in these experiments.

The following is a resume of the weft breaks from single thread tests and from the cloth as calculated:

13.7 per cent. increase. This estimate is taken from the narrow cloths as the author considers these results to be the most reliable. The figures from the 4-inch tests are 5.32 per cent. lower than the 2-inch breaks.

Three counts of weft 26s, 30s and 34s and four numbers of picks, 64, 70, 74 and 78, have been used in this series. In order to make a comparison between the strength of the weft taken in single threads from the cloth and the strength of a given number of picks when woven into cloth, the grand mean of 200 tests of each count of weft is taken as the basis in each case, with the following results:

200 single thread tests of 26s = 10.92 ounce increased to 12.60 = + 15.8 per cent.
200 single thread tests of 30s = 7.50 ounce increased to 10.62 = + 41.3 per cent.
200 single thread tests of 34s = 6.652 ounce increased to 9.43 = + 41.7 per cent.

These figures show the effect of weaving the weft into the cloth with various picks per inch.

The effect on the individual cloths is shown at Table 2.

Single Thread Tests.	Count.	Grand Mean Single Thread. Threads.	Grand Mean Single Thread. Cloth.	Increase Per Cent.
100	16	19.03	21.15	11.5
200	20	9.78	12.9	32.1
200	30	9.12	10.46	14.75
150	40	7.58	8.53	12.6

In the 26s weft the increases are not very regular, but after 70 picks there appears to be a very distinct gain, suggesting that here a useful point has been reached.

In the 30s weft, the rise is very consistent up to 74 picks, being about 5 per cent. for each increase of picks, but at 78 picks the increase is nearly 12 per cent.

In the 34s weft the increases are very regular, being about 3 per cent. for each increase of picks, tending to suggest that a fairly well-balanced cloth has been made.

Picks.	26s. Weft.			30s. Weft			34s. Weft.		
	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.
	Ounces	Ounces		Ounces	Ounces		Ounces	Ounces	
64	6.652	9.10	37.0	7.5	9.90	32.0	10.92	12.1	11.0
70	6.652	9.32	40.0	7.5	10.30	37.0	10.92	12.2	11.5
74	6.652	9.57	43.5	7.5	10.68	42.2	10.92	13.1	20.0
78	6.652	9.73	46.4	7.5	11.60	54.0	10.92	13.2	21.0
Grand Mean	6.652	9.43	41.7	7.5	10.62	41.3	10.92	12.6	15.8

TABLE 2

Series III. The fabrics of this series were made from 2/34s warp with 64 ends per inch in the cloth and 64 and 68 picks per inch of 20s and 26s respectively, and three kinds of weaves were employed namely, plain, 3 by 1 twill, and 2 by 2 twill. Thus twelve different samples of cloth were woven and from each sample 50 single thread tests were made from the warp and weft threads.

The grand mean single thread break of 600 threads of warp is 19.5 ounces and this number is used in the comparison which has been instituted. From each woven sample, six 2-inch wide pieces were tested for strength, and the grand mean (calculated) strength equals 18.2 ounces per thread, showing a loss of 7.5 per cent.

It is not an easy matter to explain this result, unless it is due to the difference in the weaves employed. The average calculated breaks for the several cloths are shown in Table 3, from which it will be observed that the only plus results are those of the plain cloths Nos. 26 and 27 in 20s weft and Nos. 32 and 33 in 26s weft. All the twills show minus results. This is probably due to the firmer interlacing of the plain weave as compared with the twill weaves.

Six 2-inch wide samples were tested from each kind of cloth, also six 4-inch wide samples but only the 2-inch tests have been recorded here, and they are shown in Table 4.

The results are not quite so regular as those obtained from the cloths in Series 1 and 2, and this seems to show that the cloths are not as well balanced as in the previous samples. It will be observed from the table that there are increases in each case, and again the plain cloths show to the best advantage.

		Plain.		3 x 1 Twill		2 x 2 Twill.	
Numbers,	Grand Mean	26	27	28	29	30	31
Ounces,	19.5	20.2	19.8	16.9	17.5	17.2	17.1
Numbers,	Grand Mean	32	33	34	35	36	37
Ounces,	19.5	21.0	19.8	16.9	16.9	17.5	17.3

TABLE 3

Series IV. In this series, further modifications have been made in the building of the fabrics, in the direction of varying the number of ends per inch as well as the number of picks per inch and the count of weft. Thus three reeds, namely; 80, 76, and 72 (Stockport count) have been used, equaling respectively 80, 76, and 72 ends per inch in the reed and averaging, 85, 81, and 77 ends per inch respectively in the woven cloth; also three numbers of picks per inch namely; 64, 68, and 72; and three counts of weft namely; 30s, 34s and 40s, making a total of twenty-seven different fabrics.

Four hundred single thread tests made from the 34s warp yarn in the state before weaving, gave a grand mean break of 9.72 ounces. Fifty tests made from the yarn of each cloth after weaving, that is, 1,350 single thread tests, gave a grand mean break of 9.166 ounces, showing a loss due to the friction and strain of weaving 6 per cent. Ten pieces from each of the twenty-seven qualities and each 2 inches wide were broken, and gave a grand mean (calculated) single thread strength of 9.81 ounces. This shows an increase in strength due to the interlacing of the threads of about 7 per cent., which is an average of 10.5 per cent. for the 80 reed, 3.8 per cent. for the 76 reed, and 6.7 per cent. for the 72 reed.

The effect of varying the structure in the manner previously indicated is shown in the following Table 5.

It will be observed in comparing the grand means that there is a consistent increased percentage of calculated strength over the single thread strength in the 30s and 34s weft, while in the 40s weft the increase is less marked. This would indicate that 40s weft is too fine to secure the necessary increase of strength due to the interlacing of the threads.

This has led to the suggestion that a machine should be constructed in which every thread in one direction of the cloth would be broken, by some kind of blow or impact. Such a machine is now under consideration and will probably be constructed during the coming session of the school.

Pending the construction of such a machine, the

Picks.	20s. Weft.		Plain.		26s. Weft.		
	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Picks.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.
	Ounces	Ounces			Ounces	Ounces	
64	16.5	17.50	6	64	10.4	14.1	35.5
68	16.5	20.00	20	68	10.4	13.9	33.5
Grand Mean	16.5	18.75	13	Grand Mean	10.4	14.0	34.5

Picks.	20s. Weft.		3 x 1 Twill.		26s. Weft.		
	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Picks.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.
	Ounces	Ounces			Ounces	Ounces	
64	16.5	17.3	5	64	10.4	11.7	12.5
68	16.5	16.7	1	68	10.4	11.2	7.5
Grand Mean	16.5	17.0	3	Grand Mean	10.4	11.45	10.0

Picks.	20s. Weft.		2 x 2 Twill.		26s. Weft.		
	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Picks.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.
	Ounces	Ounces			Ounces	Ounces	
64	16.5	17.4	5.50	64	10.4	11.70	12.5
68	16.5	17.3	5.00	68	10.4	11.40	9.5
Grand Mean	16.5	17.35	5.25	Grand Mean	10.4	11.55	11.0

TABLE 4

Series V. The results for this series are not yet complete, having been delayed owing to the school being taken over for military purposes. It is probable that they will be ready for publication in the Transactions.

The usual method of testing the strength of cloth in any of the existing machines is to break one system of threads at one time, that is either the warp or the weft threads. One of the difficulties experienced in this form of testing is that in a number of cases the strength of the whole of the threads is not recorded on the dial of the machine, because as soon as a fair number of the threads are broken the dial finger ceases to move and thus no further record is made. Various types of breaks are shown in Figs. 1 to 4.

author has thought it desirable to experiment in another direction which appears to insure a complete fracture of the texture, and that is by cutting the strips of cloth on the diagonal or the "cross," the angle selected being one of 45°. The width of the strips is 2 inches measured diagonally and the results of 270 tests are given in Table 6.

It ought to be mentioned in connection with this form of testing that great care is required in the placing of the samples in the jaws of the machine. The distance between the jaws should be measured and marked on the cloth before it is cut, and no stretch should be given to the cloth as it is placed in the machine. If this precaution is neglected the results obtained will be quite

80 REED.

Picks	30s. Weft.			31s. Weft.			40s. Weft.		
	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent.	Grand Mean Single Thread.	Calculated 2"	+ Per Cent
64	7.81	10.5	32	6.84	9.10	33	8.11	9.62	19
68	7.81	10.2	30	6.84	9.37	37	8.11	9.10	12
72	7.81	10.6	36	6.84	9.67	41	8.11	9.35	15
Grand Mean	7.81	10.4	32	6.84	9.38	37	8.11	9.35	15

76 REED.

64	8.80	9.73	11	6.95	8.62	24	8.06	9.40	16
68	8.80	10.70	21	6.95	9.40	35	8.06	9.71	21
72	8.80	11.87	35	6.95	8.95	28	8.06	9.75	21
Grand Mean	8.80	10.76	22	6.95	8.99	29	8.06	9.62	19

72 REED.

64	8.28	10.55	27	6.86	8.55	25	7.83	8.64	10
68	8.28	11.00	33	6.86	9.04	32	7.83	10.10	29
72	8.28	9.60	16	6.86	8.83	29	7.83	8.75	12
Grand Mean	8.28	10.38	25	6.86	8.80	29	7.83	9.16	17

TABLE 5

80 Reed.		76 Reed.		72 Reed.	
Number.	Break in Pounds.	Number.	Break in Pounds.	Number.	Break in Pounds.
1	No record.	10	73.6	19	88.8
2	74.3	11	78.2	20	89.1
3	83.2	12	81.7	21	94.0
4	64.6	13	65.2	22	77.9
5	66.4	14	67.1	23	82.1
6	77.3	15	70.6	24	87.9
7	66.8	16	58.6	25	78.9
8	71.1	17	63.3	26	80.4
9	77.1	18	67.6	27	80.1

Breaks of diagonally cut cloth 2 inches wide.

TABLE 6

Quality,	40/20	44/20	52/20	56/20
Minutes,	6.3	10.0	12.0	*
Quality,	40/30	44/30	52/30	56/30
Minutes,	3.6	8.16	*	9.75
Quality,	40/40	44/40	52/40	56/40
Minutes,	4.0	6.4	*	7.9

* No cloth available.

Quality,	64/26	70/26	74/26	78/26
Minutes,	43.5	56.25	78.5	86.5
Quality,	64/30	70/30	74/30	78/30
Minutes,	17.2	22.1	39.0	51.5
Quality,	64/34	70/34	74/34	78/34
Minutes,	27.5	37.0	42.8	57.25

TABLE 7

unreliable, as it is possible to stretch the cloth to such an extent as to reduce its width by nearly one-half, and then the breaking weight is increased enormously.

In my former paper already referred to, several wear testing machines were described. Two of them had been specially constructed in the school,

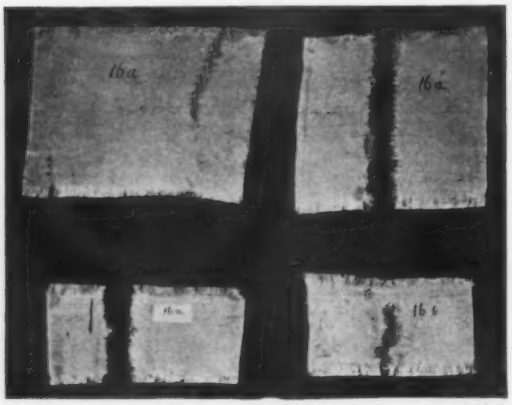

FIG. 1

but at that date very little time had been available for testing their efficiency.

The machines are of quite different types,

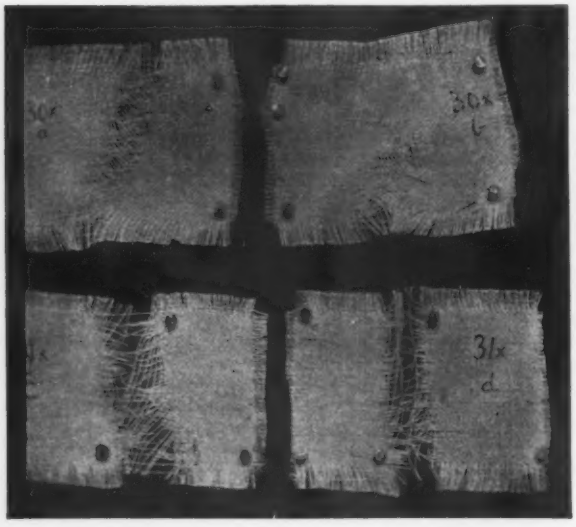

FIG. 3

namely, to and fro and boring. The first one is shown in Fig. 6. The surface which acts upon the fabric is knorled steel and to this surface a parallel motion is given, the stroke being 1-inch and the number of complete movements 200 per minute.

In order to make the machine as efficient as possible, a large number of experiments have been made and many disappointments have been encountered. The original stroke was 2 1/2 inches, but that was reduced as it was found that with the longer stroke the cloth was not worn equally.

Originally the sample to be tested was stretched in the square metal frame and secured by a skeleton lid, which was pressed upwards by a weighted lever in a rather different manner than that shown in the figure. This plan of presenting the cloth to the rubber was found to be unsatisfactory for several reasons, the principal one being that the cloth became distended and the results of the rubbing was very irregular. The next experi-

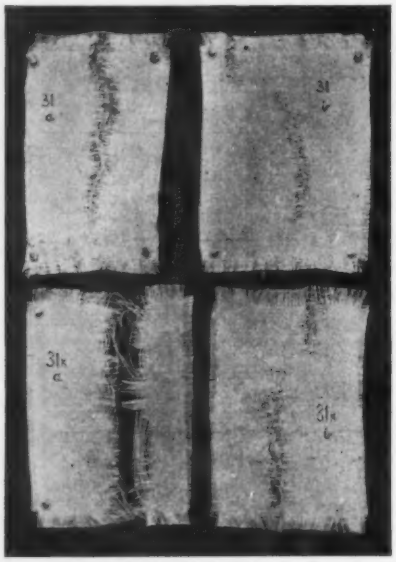

FIG. 4

ment consisted of filling the square with a piece of wood so that there was a solid bed for the cloth to rest upon and thus the stretching was prevented. It was then found that the cloth was only rubbed at each end and the tests took a very long time. The result of the protracted test seemed to be because practically only one set of threads was subject to the rubbing action, namely those lying at right angles to the path of the rubber, the other threads seemed to get in between the projections of the rubber and to suffer little or no injury. At this stage of the experiments it was decided to locate the portion of the fabric which had been rubbed, and after several trials, the present plan was adopted. It consists of a raised piece in the middle of the square of wood, and this effectually causes the cloth to be rubbed and to produce a fracture within a reasonable time.

There was still the difficulty of half the threads being at right angles and the other half parallel to the movement of the rubber, and it was therefore decided to place the sample in the frame on the "cross" and this has proved very successful.

The next point was to determine when the test was complete, and two plans suggested themselves; first to rub each sample for a fixed length of time under identical conditions, and then to compare their appearances at the end of the test; second to continue the rubbing until a hole ap-

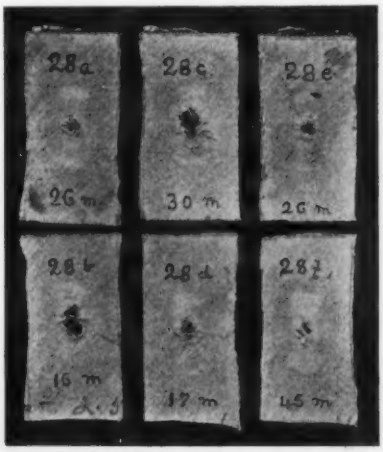

FIG. 7

peared in the fabric. The first plan was discarded as it was considered that too much would be left to the judgment of the operator upon the relative conditions of the various samples at the end of the specified time.

Consequently upon the adoption of the second plan, some means had to be devised to enable the operator to state definitely when the cloth was worn through, and a piece of dark colored paper was put under the cloth before each test and as soon as the paper appeared the test was at an end and the time occupied was recorded.

A large number of tests have been made on this machine and some of the test samples have been photographed and are shown in Figs. 7 to 10 to illustrate the kinds of fractures which were made in the cloth.

The time results of some of the tests are shown in Table 7, and from the figures given it would appear as though this system of wear testing is one which is likely to be of service in testing the wearing qualities of cloth.

It will be seen from the figures in the table that in the majority of the tests which have been made, there is a consistent increase in the wear resist-

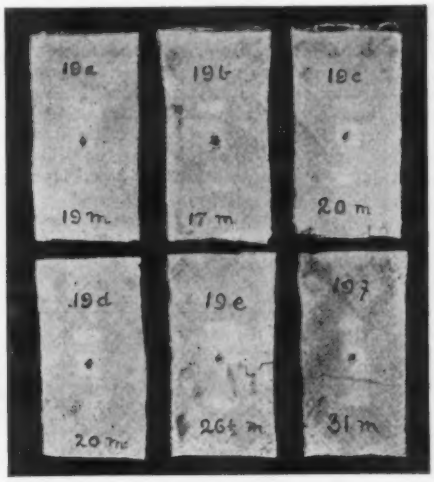

FIG. 8

ance coincident with the improvement of the quality of the cloth. The results also compare favorably with those which have been obtained from the strength tests.

Since this machine was first described before this Association a number of tests have been made on it, but it has been decided to withhold the results until they have been completed. The nature of the fractures produced by this method of wear ing are shown in Figs. 11 and 12.

In connection with Series 4, a number of tests have been made on the machine shown in Fig. 13, which is an improved type of the machine described by the author in No. 91 of the Transactions. It consists of a cylinder, A, having a knorled surface of a similar character to the other

80 Reed.		76 Reed.		72 Reed.	
Number.	Minutes.	Number.	Minutes.	Number.	Minutes.
1	15.69	10	16.12	19	14.25
2	19.37	11	18.00	20	16.75
3	25.90	12	26.25	21	23.75
4	16.62	13	14.25	22	13.00
5	19.56	14	19.82	23	14.12
6	22.75	15	24.12	24	22.12
7	13.19	16	13.37	25	12.87
8	17.06	17	16.12	26	14.50
9	19.60	18	18.37	27	18.00

TABLE 8

wearing devices; to this a circular motion is given in the direction of D, by means of the driving rope, B: the cloth is gripped at C, and a weight is suspended below D. In previous tests on this machine great difficulty was experienced in getting results within a reasonable time, so that after many experiments a weighted saddle, E, was introduced with a view to locating the influence of the wearing action. This addition has been very successful. The saddle, E, having a metallic surface, it is obvious that the knorled surface of the cylinder would be liable to some injury immediately before a cloth was worn through and to considerable damage upon the breaking of the cloth, hence it was found necessary to introduce something between the saddle and the fabric and after trying various substances, two layers of drawing paper have been used in the recorded tests and they have proved quite satisfactory. Here again great advantage has been experienced by having the cloth cut on the "cross," as this insures the even wearing of all the threads.

The results of the tests are given in Table 8 and they are so arranged that comparisons may be made vertically in each column between the various numbers of picks and counts of weft, and horizontally between the various numbers of ends per inch.

It will be observed that without exception there is an increase with the additional number of picks per inch in each set of three results; also there is a decrease as the wefts become finer, and with some exceptions there is a decrease as the ends per inch become less in number. The exceptions which are only slight are shown in the second column under 76 reed, indicate which appears to show that a better balance of structure is obtained with 72 picks of 30s, and 34s. than with the other combinations.

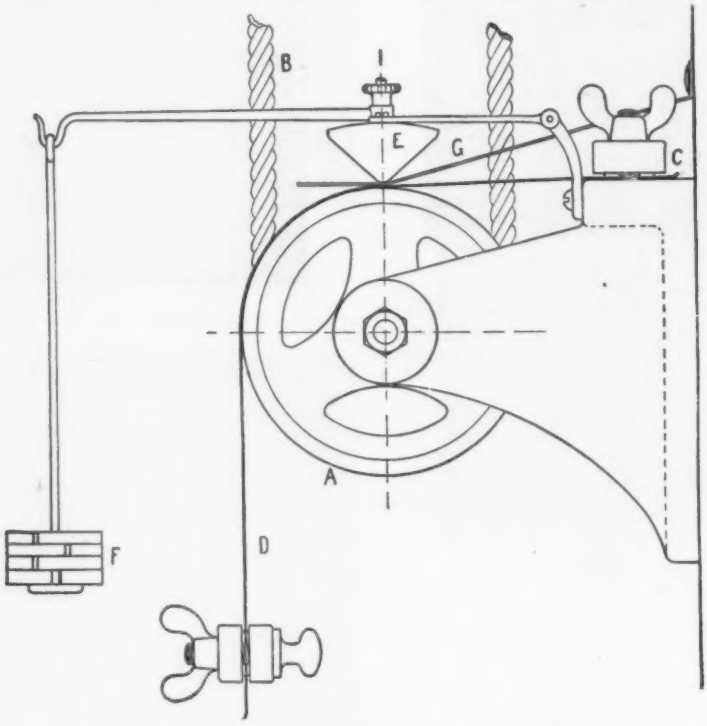

FIG. 13. A CYLINDER RUBBING MACHINE

THE WORLD'S DEMAND FOR COTTON AND INDIA'S SHARE IN MEETING IT

By ARNO SCHMIDT, Secretary of the International Federation of Master Cotton Spinners' and Manufacturers' Association, 15 Cross St. Manchester, England

The cotton industry of the world has, during the last ten years, been suffering from a scarcity of raw material. This scarcity has frequently been so pronounced that mills in all parts of the world have been obliged to curtail production at one time or other. At a meeting of the International Committee held two weeks ago in Paris, it was generally admitted by the representatives of fifteen countries that the cotton spinning industry all the world over had never been in such a depressed condition as at present, and it was stated by the members of the Committee that many English and Continental spinning mills are curtailing their working hours. This slackness of trade is partly due to the Balkan War and the Chinese Revolution, but very largely also to the high price of

American cotton, which rules the prices of all other cottons.

The primary cause of short-time working undoubtedly arises from the fear that the world's yearly supply of cotton will not be sufficient to meet the yearly demand. During last season, we were told that the American crop would be about 13,500,000 bales, while it is recognized that 14,500,000 bales of American cotton are required annually. This probable scarcity caused an increase in the price of the raw material and of the finished article, and a falling-off in the demand for manufactured goods. It must be remembered that by far the vast majority of the people in the world, the poorest, who have no choice but to use cotton clothing, have only a very small fixed amount per

ARNO SCHMIDT

annum to expend on clothing, and it makes a great difference to them, in the quantity of clothing they can afford to buy, whether cotton is 6d. or 8d. per pound.

At one time the hope was entertained that Africa would solve the problem of supplying the cotton-spinning industry with its ever-increasing requirements, but after ten years' work in that continent it has been proved that, in consequence of the absence of the requisite training of the people, the comparative scarcity of labor, the absence of transport facilities, the necessarily slow development of research work, and of the unwillingness of the people to work longer than is absolutely necessary to keep their few wants supplied, developments in these parts must be slow. Perhaps the next generation will reap the benefit of the present pioneer work. Most valuable work is being carried on, not only by the British Cotton Growing Association, but also by the German, French, Italian and Portuguese colonial cotton growing associations. The very existence of these associations is a proof of the earnestness with which this question of increasing the supply of cotton is being handled.

Egypt is limited in its cotton crop by the comparatively small area that can be irrigated; Lord Kitchener is doing his utmost to reclaim some considerable stretches of waste land, and bring it under irrigation. Egypt now produces about 1,000,000 bales, of 700 pounds, per year, but there has been during the past ten years a falling-off in the yield per acre.

The possibilities in the Anglo-Egyptian Sudan are certainly very great, but it will probably take fifteen years for that country to produce half a million bales. In view of the threatened shortage of long-staple cotton from America, owing to the advance of the boll weevil into the Sea Island tract, the irrigation scheme in hand in the Sudan should be accelerated, and money should be liberally supplied for the work.

Cotton planters of the United States of America, and others interested in land, often assure us there is no need to look elsewhere for the supplies to meet the increasing wants of the cotton industry. I would say, in reply to this contention, that it would be unwise for the world's spinners to depend upon one source of supply only, especially when, as in the case of the United States, there is a climate which, judging from the alarmist reports issued every year, seems to be the most uncertain in the world. Further, the cotton districts in the United States are suffering severely from lack of labor. Several experts who have recently visited the country state, that in 1911, when the cotton crop of the United States reached 16,000,000 bales, much more was grown, but that it had to be left to rot in the fields, as there were no people to pick it. Some authorities maintain that wages have increased of late to such an extent that the growing of cotton is becoming unremunerative, and that unless cotton can be sold by the planter at 6d. per pound, which means that the spinners will have to pay considerably more, cotton cultivation in the United States of America will decline. As an example of the recent wages paid in the United States I am able to state that, while the "piece rate" for picking in Texas usually began at 50 or 60 cents per 100 pounds of seed cotton, rising later, as the crop became thinner and more difficult to gather, to over 100 cents, during the early part of last season pickers could not be got in Texas below 70 cents, and the 100 cents rate was reached very quickly. If we remember that it takes about 300 pounds of seed cotton to make 100 pounds of lint cotton, the cost of picking works out to 1 1/2d. per pound. Under these conditions, countries outside the sphere of such high wages seem to have an excellent opportunity of competing with the United States of America, even if the climatic conditions are not as favorable. Experts seem more and more of the opinion that cotton growing in the United States will only be remunerative in the case of long stapled cottons, such as are produced in the Mississippi Delta, whose value is much above the ordinary type.

These considerations seem to justify the prevalent assumption that the limit of the cotton crop of the United States has been reached. It is true that owing to the excellent organization of the United States Department of Agriculture the yield per acre is gradually increasing; but if labor cannot be found to harvest the cotton, the full advantage of its activity cannot be realized. So long as no efficient mechanical cotton picker is invented (and so far the results obtained have not been satisfactory), the cotton crop of the United States will probably not far exceed 16,000,000 bales. In the event of an efficient mechanical cotton picker being put on the market, it is doubtful if many planters would be able to afford to purchase it. The tendency in the states is to split up the large plantations into small holdings, and the sma'l farmer has not the capital with which to buy such a machine. We must not leave out of consideration the boll-weevil scourge which is devastating vast stretches of territory. It is stated that in five years' time the Sea Island cotton districts will be attacked, and that the farmers there will be forced to grow early-maturing varieties of cotton, which are largely of short staple. It is for this reason that every effort should be made to complete the irrigation works in the Anglo-Egyptian Sudan. Egypt and the Sudan will be called upon to make up for the shortage that will result in the supply of long-staple cotton, when the Sea Island districts have become a prey to the ravages of the boll weevil.

The republics of South America are already suppliers of cotton to a small extent (500,000 bales), and when better means of transportation are established, and the population increases, it is probable that Brazil and Peru will furnish large quantities of cotton. But for a generation or two, this cannot happen. At present the unsettled financial condition of these republics prevents development.

Asiatic Russia supplies the Russian cotton industry with 1,000,000 bales of cotton of 500 pounds, quite equal in quality to Middling American. The principal cotton-growing districts are Ferghana, Syr Darja, Semiretschenck, Samarkand, and the Transcaspian territory. The danger of the increasing evaporation of moisture from the soil in Turkestan, the lack of transport communications for the importation of fodder and food crops, as well as for the exportation of the cotton crop, and the lack of labor, are the principal reasons why the extension of cotton cultivation in Asiatic Russia is bound to be slow. The average wage of a laborer is 4 shillings per day; this alone is enough to prevent any large extension.

It is estimated that China and the Korea produce about 1,500,000 bales of cotton of 500 pounds, but very little is known as to the possibilities of extension. The quality produced is very low, and the cotton is adulterated with over 15 per cent. of water and sand. The unsettled political state of China is bound to impede developments there.

Turkey produces about 100,000 bales of cotton per annum. Owing to the massacres which have recently taken place in Asia Minor, the country suffers severely from lack of labor, and even if the projected works of irrigation are successfully carried out, it will be a long time before appreciable quantities of cotton can be exported.

After considering the possibilities of the extension of cotton cultivation in all these countries, we come to India, which possesses an excellent network of railways, has a hard-working population, 90 per cent. of the 315,000,000 being born agriculturists, and in which cotton has been an important crop from time immemorial. It is true that crops in India are largely dependent on the monsoons, but it is equally true that the climate of India is no less favorable to cotton growing than that of the United States. Besides, the Government has developed a wonderful system of irrigation, especially in the north; and the Indian ryot, taking him as a whole, is a steady, plodding worker, who has begun to appreciate the advantages resulting from an increased income. This is a very important factor. The Indian ryot has discovered that well-irrigation makes cotton growing profitable; indeed, in Madras and the United Provinces, the number of wells constructed by the cultivators in recent years may be said to represent the savings that have resulted from the increased profits on cotton cultivation. These wells are the best insurance against famine.

I now turn to the question of the demand for raw cotton. It has been said that a demand for cotton goods is one of the first signs of civilization.

Alexander J. Kusnetzoff, one of Russia's leaders of the cotton industry, stated at the seventh International Cotton Congress at Brussels (1910) that of the 1,500,000,000 inhabitants of the earth, there are only 500,000,000 completly clothed, while 750,000,000 are partly clothed, and 250,000,000 do not possess any clothing whatever, and that in order to provide clothing for the whole of humanity, at least 42,000,000 bales of cotton, or 15 1/2 pounds for every human being, were annually required.

The world's consumption of cotton has increased from 1909 to 1913 at the rate of almost one million bales per annum! These figures are based upon the statistics issued by the International Cotton Federation, compiled from the individual returns of the spinners.

The weight of cotton cloths produced on power looms and consumed in India has increased from 536,960,200 pounds in 1896-97 to 988,027,318 pounds in 1912-13. The consumption per head of the population in India is equal to 3.63 pounds, or roughly 14 yards. The clothing of the people of India requires at present 3,250,000 bales of cotton (including wastes), but every additional yard used per head of the population represents an increase of about 232,000 bales of 500 pounds each. The increased prices which the cultivators of India are receiving, not only for their cotton, but also for other produce, are bound to place them in an improved financial position, which will undoubtedly lead to an increased expenditure on clothing

But besides Russia and India there are other vast countries, such as China, Africa, Central Asia, etc., all of which will demand increasing supplies of cotton clothing.

Consideration must also be given to the fact that cotton has entered into many new uses in Europe. It is in great demand for the making of

motor-car tire covers, bagging, ropes, aeroplane cloth, etc.; and, as a result of the discovery of the mercerizing process in the manufacture of certain classes of goods, cotton has replaced silk to a considerable extent. As soon as the fashionable ladies of Europe revert from the "hobble" skirt to the fuller skirt—and fashion seems to be developing in this direction—large additional supplies of cotton will be wanted. Spinning and weaving machinery has extended to meet the increased demand, and this extension will continue; but the cotton industry must obtain an annual increase of about 1,000,000 bales of raw material.

As a further example of the growing consumption of cotton by the European countries, I may state that, according to Government figures, the consumption per head of population in Germany has increased from not quite three-quarters of a pound in 1840 to 16 pounds in 1912. While the figures for the consumption of wool show a decline, the cotton consumption is more than twenty-five times bigger than seventy years ago.

This enormous and ever-increasing demand for raw cotton secures the cultivator for many years to come a remunerative price for his cotton crop, and not only the Government of India but every other Government is fully justified in encouraging the cultivation of cotton in face of this regularly increasing demand.

It is not yet twenty years since Middling American cotton was 3d. per pound, but for the past few years it has rarely fallen below 6d. per pound.

The outlook in general, as regards India as a large supplier of cotton, is most promising, but the Government will have to engage a much larger staff of farming experts. The few who are at present in the Government's employment are a great credit to the British nation, and are the most remunerative investment which the Government of India has ever undertaken. I can prove that in almost every province, through the instrumentality of these farming experts, additional millions of rupees are annually brought into the country.

The Government of India spends about £1 per thousand of the population on agriculture, leaving out veterinary expenditure. Comparisons with other countries show how absurdly small this outlay is. The United Kingdom spends £46 per thousand; Queensland, £92.5; Austria, £86.5; Prussia, £62.5; United States of America and Canada a little over £36, France and Hungary about £27. The Pioneer of Allahabad, which supplied this information, in a leading article dealing with an address I gave before the Board of Agriculture, says this comparison is very instructive, and that no one can fail to see that State expenditure on agriculture in India is only in its infancy, and that an unanswerable case exists for its expansion.

On my journey I advocated the system of supplying seed on credit, the same as has been introduced by our chairman, Lord Kitchener, in Egypt. All the machinery exists for the collection of the value of the seed through the tax collector. If this method were adopted in India, we would soon see the Department of Agriculture obtaining a monopoly over the supply of seed, and in this way the ryot would gradually free himself from the hands of the money lender. The more general establishment of cotton markets, with Government graders, and possibly in some provinces the licensing of ginning factories, would be effective means of stopping the mixing of the various cottons, for not only is the purchaser cheated through this practice, but much greater harm is done when, in the following season, the mixed seeds are sown in the field. The watering of cotton should be made a penal offence.

Even if Lancashire does not herself use very large quantities of Indian cotton, yet two great advantages accrue to the English cotton industry from the extension of cotton cultivation in India, viz.:

1. Every additional bale of cotton raised in India liberates a bale of American cotton, and consequently lessens the demand and price for it. Seeing that this year's crop in India will probably amount to 6,000,000 bales, the boon to the cotton industry as a whole, as a result of a crop of these unprecedented dimensions, must have been very great. Had the Indian crop been of normal size, the price of American cotton would undoubtedly have risen to record figures. As it is, the cotton manufacturing industry of the whole world has benefited.

2. Lancashire's secondary advantage is that by extending cotton cultivation in India by improved methods, especially by seed selection, the ryot becomes financially better off, the consequence being that he is able to spend more money on his clothing, of which about 90 per cent. is supplied by Lancashire.

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THE VALUE OF TRADEMARKS IN COTTON TEXTILES

By HENRY C. THOMSON, Trademark Specialist, 15 State St., Boston, Mass.

Before taking up the subject of trademarks, I believe it will be instructive to briefly describe prints, labels and copyrights, as considerable confusion exists concerning the functions of these closely related productions.

A print, in common parlance, may be defined as an original, artistically arranged advertisement, relating to an article of manufcture. Mere skill of the typesetter, however, will not fulfil the technical requirements governing their registration. Numerous examples of prints are to be found in the monthly magazines. They are not intended to be affixed to the product they advertise.

A label is an original artistic production to be attached to manufactured articles. The artistic effect, as in the case of a print, must be superior to that produced from type.

Prints and labels must both include the "copyright" notice. The former requires the letter "C" enclosed within a circle, the latter the word "copyright," including the name of the owner, date and the word, copyrighted.

The registration of prints and labels is prima facie evidence of use and adoption, but as no search of prior registrations is made, the issued certificate furnishes no assurance of priority.

The term "copyright" should never be associated with the name of a manufactured article; nevertheless the incorrect expression "I have copyrighted my trademark" is heard almost as

frequently as the correct form,—"I have registered my trademark."

There is no provision in the law of copyrights under which names of articles of manufacture may be copyrighted.

The erroneous impression that a trademark may be copyrighted may be caused by the fact that "prints" and "labels" are authorized under the copyright law and because books and periodicals carry the copyright notice.

Much more could be said relative to the foregoing subjects before we devote our attention to trademarks, but perhaps this brief outline will assist in gaining a better understanding concerning them. The chart, Fig. 1, accompanying this article, furnishes information relative to the technical requirements of their registration.

Historically speaking, the practice of affixing a symbol to the product of man's creative genius for the purpose of distinguishing the maker, or as a token of authenticity, is as old as the potter's art.

Crude symbols, consisting of crosses, geometrical figures, conventional animal forms, etc., are found impressed upon Egyptian, Assyrian and Babylonian pottery. These marks are believed to be primitive trademarks, as they are not included in the design.

The Greeks and Romans utilized trademarks.

Copyright 1920 by Berry & Thurston	SUBJECT MATTER	KIND OF SUBMATTER	MANNER OF USE	DATE OF FILING	PLACE OF FILING
PRINTS	MUST include artistic features	MUST be descriptive of article	Must NOT be borne by article	MUST be filed BEFORE use	PATENT OFFICE
LABELS	Ditto	Ditto	MUST be borne by article	Ditto	Ditto
TRADE-MARKS	Need NOT be artistic	Must NOT be descriptive of article	Ditto	Must be filed AFTER use	Ditto
COPY-RIGHTS	Books, Catalogues, Circulars, Tabulated information charts, Maps, Photographs, Drawings, Illustrations, Lectures, Works of art and reproductions, Poems, Songs, Dramatic and musical compositions		Ditto	Must be filed BEFORE use	LIBRARY of CONGRESS

FIG 1

In the thirteenth century paper manufacturers commenced the use of water marks. In the fourteenth century, gold beaters' guilds made use of distinctive marks to define origin.

It may be interesting to learn that the representation of a dolphin, wound around an anchor, adopted and registered as a trademark by a prominent manufacturer of cotton goods, was utilized as a trademark by a publisher in the fifteenth century.

A special section devoted to "cotton marks" is found in the English Trademark Statutes. Its object is to define with exactness that which may be registered as a trademark for cotton cloth and yarn. Words unaccompanied by a design are not registrable. Owing to the war, I have been unable to learn the reason for this prohibition. It may be that long concurrent use of the same word by different mills may have rendered certain textile names generic, i. e., referring to a class or grade of goods rather than a name denoting personal origin. Requiring a mark to be composed of a name plus a symbol would tend to create distinction.

English textile trademarks were the subject of litigation as early as 1742. Lord Hardwicke in this case used these words, "fraudulent designs to put off bad cloths to draw away business."

It may be instructive at this point to quote an

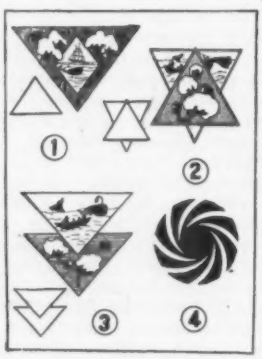


FIG. 5

FIG. 6

abstract from a Supreme Court decision defining the attributes of a valid trademark, where it was said:

"A trademark is a word, letter, device or symbol, or some combination of these . . . pointing distinctly to the origin (personal origin is meant) or ownership of the articles to which it is applied."

I call your particular attention to the words "applied" and "distinctly" found in this definition of a trademark.

The former, used in the phrase "to which it is applied" points out that the mark must be physically affixed to the product; that mere adoption of a name or its use in advertising does not establish any right as a trademark, and by implication shows that trademarks cannot be devised and held for future use. Confusion is prevalent concerning these matters in the textile industry, as I have learned.

One of New England's largest textile manufacturers placed the mark "A M A" on its tickings and attempted to restrain others from using this same combination of letters. The Supreme Court held that this designation pointed distinctly to quality, not to origin, using the following language in the decision, "He has no right to an exclusive use of any words, letters, figures, or symbols which have no relation to the origin or ownership of the goods . . . he has no right to appropriate a sign or symbol which, from the nature of the fact which it is used to signify (meaning quality), others may employ with equal truth." In another textile case the letters "LL" were involved. Numerous affidavits were submitted to prove that when "LL" goods were called for it unqualifiedly pointed to the cloth of a certain manufacturer, nevertheless the defendant convinced the Court that the letters referred to the grade of the cloth rather than to the maker.

The term "trade-name" is incorrectly used by many business men, when trademark is meant. It is not a correct synonym for "trademark." A trade-name more properly refers to the name of a business enterprise. "Indian Head Mills" and "Merrimack Mfg. Co." are trade-names. "Indian Head" cotton and "Duckling" fleece are trademarks.

Trademarks (meaning "origin brands") may be divided into two groups, "common law" and "registered."

"Common law" trademarks are such as have never been registered in the United States Patent Office and for better understanding should be divided into two classes. (1) Trademarks capable of registration in the United States Patent Office; (2) trademarks incapable of registration because they have been adopted by others or come under rules of prohibition.

FIG. 7

FIG. 8

To prevent any misunderstanding, it may be well to state at this point that an owner's right in a trademark is as protective under common law as under Federal registration, because the good-will a trademark creates is deemed a property right.

This doctrine on its face would seem to indicate that no advantage accrues to the owner through registering his trademark, but such an impression would be erroneous, because the Federal trademark law is a protective measure; restraining by injunction simulation of the mark, whether fraudulent intent is found or damage proved. Under common law unfair competition of a mark must be proved; under Federal registration wrongful intent is presumed.

My experience teaches me that common law trademarks have marked disadvantages, not because they are unregistered, but by reason of the neglect to which they are almost universally subjected by their adopters. As has already been said, the feature or priority (first use) is a vital attribute of a valid trademark. Notwithstanding this fact it is no exaggeration to say that probably 90 per cent. of the adopters of a common law trademark subject the mark to no more careful test to determine this quality than the narrow scope of their own memory and observance.

Such a meager test is carelessness personified, in view of the fact that over 400,000 marks have been registered in the Patent Office or recorded in private bureaus. Consequently, the first duty to be performed after selecting a trademark (an origin brand) is to determine whether it has been subject to prior adoption. This is termed making a "priority search," and is undertaken more properly by attorneys who make trademark law a specialty, as usually they have access to a larger number of recorded marks and are better fitted than the regular practitioner to render an opinion concerning that which constitutes simulation. Trademark specialists are located in all of the large cities.

Another disadvantage is that actions for infringement of common law trademarks must be brought in a state court unless the parties are citizens of different states. Under Federal registration they are brought in a Federal Court. Federal Court decisions in one district are almost universally upheld in the several districts covering the United States; not so with decisions of the state courts. Recent decisions have declared that the owner of unregistered marks acquire rights of exclusion restricted to the territory in which the goods have been sold. Quoting from a decision, "unfair competition (action of infringement of unregistered marks are brought under this law) is not shown where two articles are not offered on the same market, do not in fact compete, and defendant adopted the plaintiff's name in ignorance of its prior use by the plaintiff." In another case complainant's exclusive rights in his marks was restricted to four states.

The most pronounced disadvantage of a common law trademark, in my opinion, is the opportunity it gives for other concerns to obtain Federal registration of the same mark for the same goods. The Trademark Division of the Patent Office confines its priority investigation to marks recorded in the office. It does not concern itself with privately adopted common law marks.

TRADE-MARK	HELD INFRINGED BY
"Apollinaris"	"Apollinis"
"Bovinine"	"Bovina"
"Cascarets"	"Cascinets"
"Celluloid"	"Celloxite"
"Chartreuse"	"Chasseuse"
"Clark's O. N. T."	"Clark's N. E. W."
"Corona"	"Coronita"
"Delsc"	"Delos"
"Egyptian Deities"	"Egyptian Amazu"
"Electro-Silicon"	"Electric-Silicon"
"Excelsior"	"Excelsior"
"Gold Dust"	"Gold Drop"
"Gothic"	"Tonic"
"Guarana"	"Genuine"
"Hostetter's Bitters"	"Host-Style Bitters"
"Junket Tablets"	"Junket Capsules"
"Lacto-Peptine"	"Lactopepsine"
"Little Shop"	"Little Antique Shop"
"Miller's Chicken Cock Whiskey"	"Miller's Game Cock Rye"
"Monte"	"Monte"
"Old Crow"	"White Crow"
"Portland"	"Famous Portland"
"Rogers"	"RoDgers"
"Sapolio"	"Sapho"

FIG. 9

FIG. 10

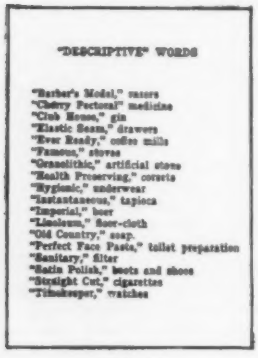
Expensive cancellation proceedings or a suit for infringement are the only means of preventing the use of a duplicate mark registered inadvertently.

As an example of neglect in the textile industry to determine priority before the adoption of a trademark I call attention to the half dozen (not figuratively but literally) kinds of "Red Cross" hosiery, and the scores of other marks where from two to four concerns are using identically the same term.

It is beyond all understanding how the business man will disregard this matter of determining priority of use before adoption, when it is the all important requirement. In the "Red Cross" cases, necessarily there is but one owner of this mark, and five infringers, all of whom have put time and money into popularizing their product under the term. Thousands of dollars will be spent before the tangle is unraveled and the first adopter secures exclusive use of the term.

It is my belief that Federal registration of trademarks should be obligatory, as is true in Germany, thereby furnishing a positive means of determining the right of appropriation. If the owner of a mark does not attach sufficient value to it to seek registration he should lose his rights of exclusion thereunder.

As a registered mark must be accompanied by the notice "Reg. U. S. Pat. Off." the mere notice


"DESCRIPTIVE" WORDS

"Barber's Model," razors
"Cherry Pectoral" medicine
"Club House," gin
"Elastic Seam," drawers
"Ever Ready," coffee mills
"Famous," stoves
"Granolithic," artificial stone
"Health Preserving," corsets
"Hygienic," underwear
"Instantaneous," tapioca
"Imperial," beer
"Linoleum," floor-cloth
"Old Country," soap.
"Perfect Face Paste," toilet preparation
"Sanitary," filter
"Satin Polish," boots and shoes
"Straight Cut," cigarettes
"Timekeeper," watches

FIG. 12

FIG. 14

"trademark" affixed to a product usually indicates a "common law" mark.

Registered trademarks are such as have been filed in the Trademark Division of the Patent Office; and have successfully met the technical requirements of the statutes, and for which certificates of registration have been issued.

The ruling principle of the Patent Office is to grant only such trademarks as will successfully withstand the test of the courts. It was with this in mind that certain restrictions were incorporated in the statutes.

The following are a few of the more important attributes a trademark should possess.

In the case of symbols, i. e., designs, the simpler the mark the more difficult its evasion. Solid backgrounds compared with outline effects are to be preferred.

Personally I am not in favor of arbitrary symbols as trademarks, however striking they may be, unless they have an alternate in a word. Products are called for by name.

To the Pacific Mills symbol mark, shown in Fig. 5, I should accord the blue ribbon, because of its distinctiveness and compelling attractiveness. However it cannot be referred to by name, unless it is designated as the "pin wheel" mark. Symbols consisting of animals, birds, certain geometrical figures, the fleurs-de-lis, arrows, seals, etc., furnish both visual and oral features. Indian Head cotton, and Arrow Collars are examples. The marks in the right hand column in Fig. 6 have an alternate in speech. Those in the opposite column do not lend themselves to oral mention.

Symbol trademarks frequently and unfortunately degenerate into mere pictures in the unguided hands of the average artist, unaware, first, that a generic symbol of an industry is unprotective; second, that in adding elements to a design the exclusive protection of the single elements is impaired. One and two in Fig. 5 are examples of picture trademarks registered to different concerns, notwithstanding the same mere general effect which will be noted. Registration was allowed because the predominating element is the representation of the cotton boll, incapable of exclusive appropriation in the cotton industry, although it would be deemed of arbitrary significance adopted for other products. Included in each mark, as will be observed, is a representation of a whale and whale boat. Either of these elements or both combined would have been capable of exclusive ownership if segregated, but combined with a geometrical figure and with the cotton boll they become a mere element of the tout ensemble.

To illustrate the opportunity of devising a registrable mark which will produce the same general effect by utilizing the same elements, I have rearranged them as shown in Number 3. I am confident such arrangement would pass the inspection of the trademark examiner. In the way of comparison note trademark Number 4, consisting of a single symbol element so strong, so distinctive that it is practically proof against successful invasion. Symbol trademarks should be simple unless export requirements dictate a different policy.

In Fig. 7 are shown reproductions of several textile trademarks of the symbol type. The ram's head in the American Woolen Company's mark is open to criticism in that the representation of the side view of the head of the animal, adopted by another mill, would not be deemed simulation. The Pine Tree mark is strong. The Indian heads, one for cotton goods and the other for woolen goods, are distinctive. The mark depicting a compass is exceedingly good. The reproduction of a foot showing a sandal is well conceived. The Thread Company's mark which includes four circles is weak, as it lacks character and distinctiveness. It is an old-fashioned mark.

Symbols and words sometimes lose their power to denote origin, in other words, they become traditional marks. The word and the symbol of a star for beer; the word and the representation of an eagle for paints; the word and the diamond figure for varnishes (thirty variations being disclosed among unregistered marks) are no longer capable of denoting origin unless combined with other subject matter. This condition arises either through neglect of the first user to assert his rights, or the successive adoption of marks in which the symbols formed but one of the elements.

It is unwise to allow an artist to create a symbol trademark except under the supervision of the trademark specialist. He is more liable, owing to his inexperience, to incorporate unprotective or unregistrable matter.

Words adopted for trademarks should be distinctive; easily pronounced; easily remembered; easy to spell and with syllables instantly apparent. Suggestive words are protective if they are not descriptive. "Hercules" duck, indicating its strength, would be suggestive and registrable. "Non-tearable" duck would be descriptive and unregistrable.

Words combined with designs make effective trademarks. As a rule the name should be the predominating feature. Many marks of this type lack character and distinctiveness.

We will now consider trademarks which comply with the Federal law, that is, are capable of registration.

1. A mark that will not cause confusion among purchasers.

A coined word fulfils this requirement in the highest degree. Kodak, Chiclets, Omo, Crisco, Vaseline and a host of others are of this type. The omission of Uneeda, in view of its widely extended publicity, may be noticed. It is omitted because it skirts the border line of unregistrability, in fact it was refused in England, being deemed descriptive.

2. The same mark as another adopted for products having different distinctive properties. (See Fig. 8).

The law gives a trademark adopter a monopoly in the use of the mark only for the product to which it is applied. The textile manufacturer, for instance, has a right to adopt such terms as "Uneeda" cotton, "Coco Cola" sheeting, "Grape Nuts" taffeta, or "Jap-a-lac" duck. The permissive use of another's mark for dissimilar goods is based on the doctrine that unfair competition must be competition in fact. It has been held that an owner of a trademark must allege an interest from which damage might be inferred. If the mark has been used on goods of another classification it is difficult to prove damage.

It must not, however, be understood that registration in one class gives the right of exclusive use of a trademark for all products covered by it. For example, while hosiery and knitted underwear, percales and shirtings are deemed products having the same descriptive properties, silk piece goods and woolen dress goods, have been held to constitute goods of different classification, notwithstanding that all come under class No. 42.

If a manufacturer owning two mills, one devoted to the manufacture of silk piece goods, and the other making woolen dress goods, desired to register the same mark for both products he would be obliged to procure separate registrations in order to prevent another from registering the same mark.

Certain foreign countries divide textile products into as many as six classifications, in order to prevent confusion.

Marks deemed unregistrable under the Federal Statutes include the following:

1. An identical or confusing mark in the same class. Fig. 9 shows trademarks held confusing by the courts.

2. Surnames, when not distinctly arranged. Examples of surnames rendered arbitrary by means of additional matter are shown in Fig. 10.

3. Geographical names. The examples in Fig. 11 are instances of refusal by the Patent Office to grant this type of trademark.

4. Words describing the quality and character of the product. Efforts to secure registration of the terms shown in Fig. 12 were unavailing.

5. Names or portraits of ex-presidents of the United States. It is considered against public policy to allow their registration.

6. Any misrepresentation of a product. Misrepresentation may not be discovered by the examiner, resulting in registration being granted, but later the mark may be declared invalid by the courts.

7. Immoral or scandalous matter. The reason for this prohibition is obvious.

8. The Red Cross symbol, flags or coats of arms of the United States or foreign nations, or emblems of fraternal societies.

9. Portraits or names of living individuals without their consent.

An erroneous impression persists that combining words into a single term and the misspelling of obviously descriptive words render such creations arbitrary. That such an impression is widely held is evidenced by literally thousands of such trademarks adopted for articles of various kinds. Poverty of knowledge concerning the law accounts for their adoption. The doctrine prohibiting the registration of this type of trademark was established by the Supreme Court, when it said "bad orthography does not make a word the arbitrary sign of something else than its conventional meaning."

The fact that the supply of animals having strong profile characteristics is limited, and therefore soon exhausted, combined with the knowledge that this type of mark assists in disposing of the goods, develops a strong temptation on the part of textile manufacturers who have not already invaded the field to counterfeit or simulate animal marks. If, for example, it is decided to simulate instead of counterfeit a "camel" trademark, the customary procedure is to depict the animal in a different position, perhaps adding a date palm, a sphinx, or a pyramid, or a letter or number to the name of the camel, "Camel AA" for instance.

If the second adopter of the camel mark is not restrained by the original owner, usually another pirate will appear on the horizon. He proceeds to make still another variation in the mark.

In closing this article I desire to emphasize the ruling thought which pervades the text, concerning which many business men unwisely give but little regard, which is that trademarks have a judicial aspect as important for careful consideration at their inception as they have after their rights have been invaded.

Asked to suggest the course to pursue to best protect a trademark from contingencies, my advice would be to proceed as follows, under the guidance of an attorney who specializes in trademarks:

1. Make a "priority search" to prove right of adoption.

2. Apply for Federal registration to secure prima facie evidence of ownership and serve notice of adoption.

3. After registration, supervise all published

trademarks to prevent inadvertent registration by competitors.

Just this final thought; no trademark is 100 per cent. good unless it is good against the world.

COST OF THE PERMANENT FIREPROOFING OF COTTON GOODS

By J. E. TOD, 10 Aytoun St., Manchester. Eng.

"While there is not as urgent demand in this country as in England for a cheap and permanent process for rendering flannelettes and other napped cotton goods non-inflammable, the commercial advantage of such a process is recognized, and for special uses certain cotton fabrics are regularly treated to ensure non-inflammability. Because of these facts the paper on The Permanent Fireproofing of Cotton Goods, by Professor William Henry Perkin, Manchester, Eng., that was read at the convention of The National Association of Cotton Manufacturers last fall, attracted unusual attention. This paper not only reviewed practically all known processes of fireproofing cotton goods, but gave to the world the details of a process developed by Professor Perkin that is not only superior to others in all other features, but is permanent, being affected neither by washing nor wear.

"The value of a pound of print cloth varies from 25 1/2 cents to 27 cents per pound. Under all circumstances the process must increase the weight of such a fabric from 10 to 15 per cent. in order to make it effective. Therefore, 10 per cent. of sodium stannate on one pound of cotton fabric will amount to 10 cents and thus 5 per cent. of ammonium sulphate used in this process will amount to 3 cents, making a total of 13 cents for chemicals in one pound of cloth.

"The finishing process is also an expensive one. It requires a double immersion and double drying, which will cost at least 2 cents per pound of cloth, bringing the total cost of fireproofing to 15 cents In ordinary prints there are from 7 1/2 to 8 yards per pound, making the process cost about 2 cents per yard. The selling price of print cloth varies from 3 1/2 to 4 cents, therefore for prints the process is out of the question.

"For gray goods used in flannelettes the value of one pound of cloth varies from 28 1/2 to 30 cents. The finishing of this material will absorb a considerably greater quantity of the fireproofing material than the print, so it is reasonable to say that it will require at least 25 per cent. per pound of finishing material, bringing the cost of finishing one pound of flannelette to 25 cents. As there are about five yards to one pound, the cost of fireproofing per yard will amount to 5 cents, which cost again is prohibitive for general use."

The fireproofing of many cottons is a very desirable feature, particularly of most napped cottons, but its practical solution is only possible if the price of the finished fabric is only slightly above the price of the non-inflammable fabric, otherwise it will not pay the manufacturer to put it on the market."

The letter from Mr. Tod, which has been referred to above, states:

"The cost of fireproofing flannelette by the non flam process, as regards work done in this country, is greatly exaggerated in the costings given in the article from the Textile Manufacturers' Journal of Feb. 28, 1914.

"The cost of chemicals—sodium stannate and ammonium sulphate—as the goods have been run commercially by us—has varied from one-quarter penny to one-half penny per yard, the lower price being for flannelettes of lower quality, 32 inches wide, and the higher price for good quality, 36 inches wide. The cost of labor has been the same in all cases, one-quarter penny per yard.

"To these prices we ourselves add one-eighth penny per yard for royalties, experimental and research work, etc. The total additional cost for the fireproofing process was thus from five-eighths of a penny to seven-eighths of a penny per yard.

"You will notice we have referred to this process in the above statement somewhat in the past tense. As a matter of fact, we are still fireproofing by this process, but are expecting shortly to change to another and much better one.

"You will be interested to hear that Professor Perkin and his assistants, continuing their researches have discovered a new process for permanently fireproofing cotton materials. In this case the cost of the chemicals is not more than one-half and may be as low as one-quarter of the older process.

"The cost of labor will not be higher. In fact, we are confident it will be considerably lower.

"Machinery is now being erected to work this process on the commercial scale.

"About twelve months ago we threw open the process described in Professor Perkin's lecture at the meeting of your Association at Atlantic City, September, 1913, so the cost is reduced by the amount of royalties—one-eighth penny per yard."

It is needless to make a reminder that recent events have disturbed prices of chemicals so that the relations between the two statements may be relative and not absolute.

TIME-TEMPERATURE DISTRIBUTIONS IN A BALE OF COTTON

Made by the Bureau of Standards, Washington

The purpose of this test was to determine the time required to bring every point in a bale of cotton to a specified minimum temperature, when the bale, at approximately a known uniform temperature (room temperature) throughout, was placed in an enclosure maintained at a given temperature.

The time required to reach a specified temperature at any point within the bale, under conditions such as those mentioned in the previous paragraph, will depend, in general, on the location of the point within the bale, and on the difference between the temperature at which the enclosure is maintained and the temperature of the bale when introduced. In general the geometrical center of the bale will be the last point to reach the specified temperature. The greater the difference between the temperature of the enclosure and the temperature of the bale, for a given initial temperature of the latter, the shorter will be the time required to bring any given point to a specified temperature.

The amount and distribution of moisture in the

bale will also influence the time required to reach a specified temperature at a given point, for a portion of the heat supplied will be used up in evaporating the moisture contained in the bale, and consequently will not be effective in raising the temperature of the cotton. It is evident that the portion of the bale containing the greatest proportion of moisture will, for a given amount of heat supplied, show the smallest rise in temperature.

For the purpose of determining the temperature rise at various points within the bale, which in this experiment was of Egyptian cotton, thermo couples consisting of B, and S. gauge No. 33 copper and No. 32 constantan wire were placed at points as shown in Fig. 1. Couple No. 1 was at the geometrical center of the bale. Couple Nos. 2, 3 and 4 were located, one on each of the three mutually perpendicular axes passing through the center of the bale, halfway between the center and the respective sides. The consequent depth of immersion of the junctions and the directions of the holes through which the lead wires entered are evident from the figure (Fig. 1).

The bale remained for two weeks before the test in a room whose temperature varied between 73° and 77° F. For the latter ten days of this time the temperature of this room varied between the still narrower limits of 75° and 77° F.

The constant temperature room (hot room) was brought to approximately 150° F. and maintained at this temperature by means of a thermostat. The bale was weighed, removed from the room in which it had remained for the previous two weeks, placed in the hot room and observations begun within the hour. The differences between the temperature of the hot room and the temperature of the bale at the points where the couples were located were observed every hour until the latter part of the run where the temperature of the bale was changing more slowly, when observations were made every two hours.

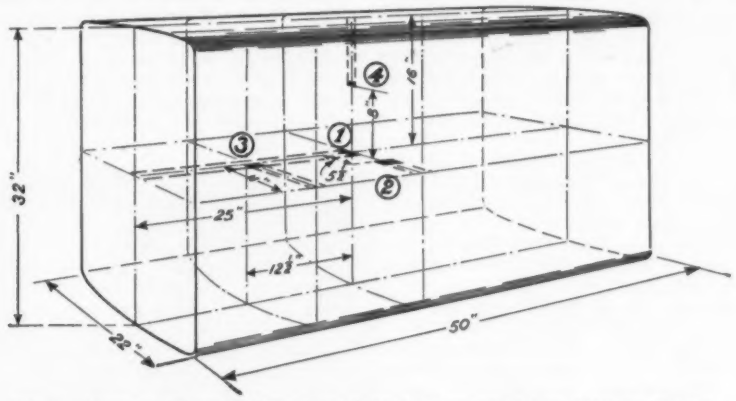


FIG. 1. POSITION OF TEMPERATURE MEASURING INSTRUMENTS IN BALE OF COTTON

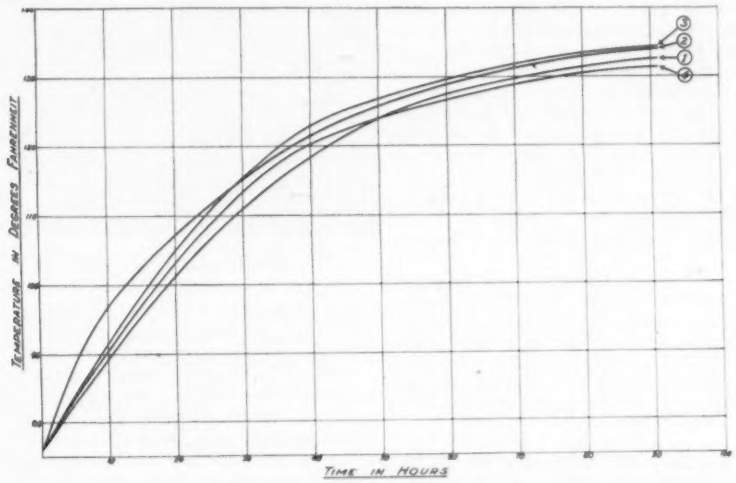


FIG. 2 TIME TEMPERATURE CURVES

During the test the bale rested approximately eight inches from the floor on a truck of such construction that only a very small portion of the lower surface of the bale was covered by the upper surface of the truck.

Whether the temperature (150° F.) at which the hot room was maintained is sufficiently high to have any injurious effects on the properties of the cotton fibers was not determined in this series of experiments. To diminish the time of exposure necessary to ensure that every point of the bale has attained a specified minimum temperature, it is obviously desirable to have the temperature of the hot room as high as possible without thereby causing damage to the fibers.

In Curves 1, 2, 3 and 4 are shown the time-temperature curves for thermo-couples, Nos. 1, 2, 3 and 4 respectively. From these there may be obtained the temperature indicated by the thermo couples at the four points, corresponding to any desired time. For example, referring to Curve 1, the temperature indicated by the thermo couple at the center of the bale, twenty hours after the bale was introduced into the hot room, was 101.5° F.

The position of the points lying consistently below the curve between thirty-three and forty-five hours in Curve 1, are due to accidental rise in the temperature of the hot room due to a variation in the heat supply. They were not considered in drawing the curve as they were known to be inaccurate.

For purposes of comparison, the time-temperature curves for the four thermo couples are assembled on one sheet in Fig. 2. It will be seen that thermo couple No. 4 indicated the lowest temperature at the end of the test, instead of No. 1 as might have been expected. The cause of this rather unlooked for result is unknown. It might be explained by the distribution of the moisture in the bale, but this is not necessarily the only possible explanation. That the bale did contain considerable moisture is shown by its weight before and after test, 733 lbs. and 713 lbs. respectively, thus showing a loss of 20 lbs. It is evident that in estimating the time required to bring cotton bales to a specified temperature throughout, a large factor of safety must be allowed on account of the different moisture content of various bales, and possible differences in their thermal conductivities.

The differences in the temperature rise indicated by the several thermo couples are small enough that, making a reasonable allowance for the uncertainties that necessarily occur in a test of this sort, the time required to bring the bale to a specified minimum temperature throughout may be taken from any one of the curves.

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THE THIRTY-FIFTH ANNIVERSARY OF ELECTRIC LIGHTING

Wednesday, October 21, this year, will commemorate the thirty-fifth anniversary of the invention of the electric incandescent lamp by Thomas A. Edison. This day in 1879 may be said, broadly speaking, to mark the birth of electric lighting. Certainly it marked the birth of the general and popular use of electric lamps. Arc lamps had been in use some years previous to this time; but only a few of these were then employed for searchlights, to light theatres, parks, street corners and similar public places. The universal lighting of both public buildings of all kinds as well as private dwellings by electricity through small units became a dream realized only when Edison first successfully made his electric filament bulb glow in his laboratory at Menlo Park, N. J., thirty-five years ago.

"Edison Day" is unique in that it not only does honor to the inventor of the electric incandescent lamp, but is also from an industrial standpoint as much a lighting company anniversary as it is the first big milestone in the manufacture of incandescent lamps. It is the real origin of the whole lighting business. In 1880 an employe of the Edison factory carried all the electric incandescent lamps in the world from Menlo Park to New York City in a market basket on his arm. A year later it was considered a wonderful feat when the small factory turned out a thousand lamps a day. Today the great Edison lamp factory at Harrison turns out 35,000 lamps an hour and will have made in all more than 500,000,000 lamps during the period of the phenomenal progress of electric lighting up to "Edison Day."

The announcement of Edison's first lamp, which may be called the first advertisement of the lamp, appeared in the New York Herald on Dec. 21, 1879, two months to a day after its invention.

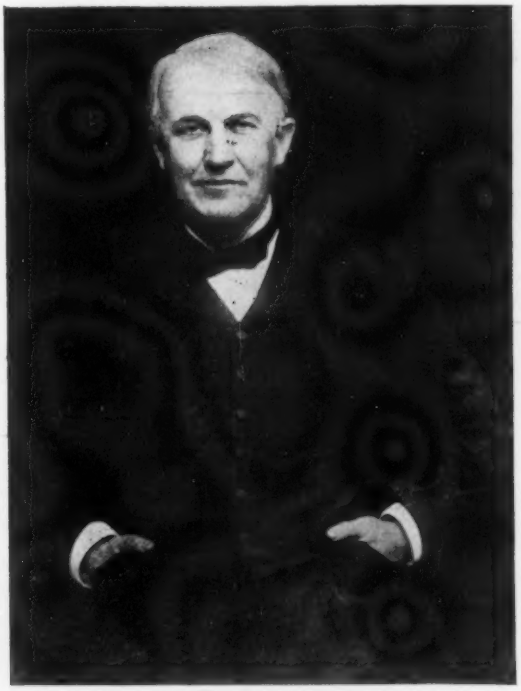
We are all more or less familiar with the events of the romantic life story of Thomas A. Edison, the boy who only really went to public school three months, was given up by his teachers in despair because he was always at the foot of the class, was taught by his mother, installed a "laboratory" in the cellar of his home, started in business as a newsboy on trains of the Grand Trunk to get money for scientific books and equipment for his "laboratory," installed another "laboratory" in a baggage car of the train and was thrown off because one of his dubious experiments set fire to the car, became a telegraph operator, began to invent and became the greatest inventor of the age, having taken out no fewer than 1,328 separate patents from 1869, the date of his first patent, up to the summer of 1910. The height of his activity was in 1882 when 141 patents were applied for.

The events connected with the invention of the electric incandescent lamp are especially interesting at present. It was but one of the many incidents in the strenuous days of Edison's life at that time. To the problem of subdividing the electric light, Edison addressed his genius and all the resources he could command. The world had become familiar already with the big arc lamp and was using it in lighthouses, in public parks and on the streets, but it wanted a light that could be used indoors in small units, comparable with wax and tallow candles, gas jets and the oil lamp. That electricity could furnish such a lamp had been believed for many years by inventors in this country and abroad, but it was not forthcoming.

When Edison, fresh from his great successes in the quadruplex telegraph, the telephone transmitter and the phonograph, threw himself on the problem that had practically been abandoned as

hopeless, there was limitless scepticism, derision and opposition.

Work went on incessantly day and night in those years of 1878 and 1879. To go off home to sleep was regarded almost as treason, as a disgraceful concession to mere human weakness. One might get a wink or two at the laboratory, if some place of concealment could be found; but even in the middle of the second wink, a call to arms would come, because a new line of experiment had been hit upon and must be attacked at once. Edison, himself, in spite of all reports to the contrary, had to get an occasional nap. One of his resorts was the cupboard under the stairway, where he was most luxuriously ensconced



THOMAS A. EDISON, INVENTOR OF THE ELECTRIC INCANDESCENT LAMP

among the dust-brooms and scrubbing pails. He also showed a great agility and ability in sleeping offhand inside a rolltop desk. So far as known, this invention has never been patented.

But there were interludes of play, and the relief of joke and jest. One of the funniest episodes was when Edison made carbonized filaments out of the very fiery whiskers of one of his staff. He insisted that by doing this he was already half way up the spectrum and got a flying start with a dull red glow. But when elaborate calculations were made as to the available supply of red hair in the world for filament purposes, the project was given up in despair.

For nearly ten years the Edison lamp was made with bamboo filaments; and to that lamp must be attributed in a large degree the marvelous development of electric lighting and power all over the world, as well as the creation of the modern central station industry, which in the United States alone represents an investment of over $2,500,000,000 and annual earnings of over $350,000,000. Even as late as 1908, a few special types of Edison bamboo lamps were being made. But Edison himself did not regard the bamboo lamps as the "last word." Paralleling the carbon filament lamps of bamboo, there soon appeared the "squirted" filament, employing carbonized cellulose in one form or another, and a great many lamps for a number of years were of that type. Another advance was embodied in lamps still of the carbon type, in which the filaments were strengthened by such substances as would justify calling them "metalized." The mere word was a revelation as to the direction in which the art was tending, and very quickly real metallic filaments were on the market and available to the public. In particular, the metal tantalum, quite rare and scarce, seemed to disengage itself from the rest of the group and was found useful in many ways, but it was never more than a half-hearted competitor with the good old carbon lamp. Yet all the immense amount of investigation in the field of rare metals capable of giving higher and intenser illumination was bound to yield a result if improvement actually lay along that line. The way out was soon found in tungsten, a metal tried as far back as the earlier days of Edison, but not then available under the practical conditions of its production and use.

The introduction and general adoption of the Mazda tungsten lamp has been literally nothing short of a revolution in the art of interior illumination, with a correspondingly tremendous effect on exterior lighting. Working down from a consumption of 4 or 5 watts of electrical energy per candle power in Edison carbon filament lamps to the standard of a few years ago of 3.10 watts per candle power, the Mazda lamp has brought that down in about five years to 1.25 watts; while in the larger sizes of Mazda gas-filled lamps, the reduction in current consumption has reached the low point of a half-watt per candle.

The intimate history of the birth of the electric incandescent lamp is best told by W. H. Meadowcroft, Mr. Edison's secretary, who was associated with Edison when he produced the lamp.

"Business was getting fairly well under way when I assumed my duties at 65 Fifth Ave., New York. The back parlor was used by Major Eaton as his office; on the second floor was Charles L. Clarke, the chief engineer with H. M. Byllesby at the drafting board; Edward H. Johnson had part of the same floor with E. T. Greenfield as the foreman of his wiring gang; and a good part of the third floor was used by Mr. Edison as his office and headquarters, with Samuel Insull, recently from London, installed as secretary. On the third floor there was also the patent department, where Colonel Dyer and several assistants were kept busy day and night making applications for patents on the flood of inventions that Mr. Edison was constantly pouring in.

"Those were strenuous days for Mr. Edison. He was working about twenty hours a day at this time, sometimes longer, and how he ever got through so much work and accomplished so much is a mystery to me even at this day. He seemed to be utterly oblivious of the every day things of

life. When he seemed to need new clothes, Mr. Insull would order them and have them delivered to Mrs. Edison. When they arrived she would wait until he had gone to bed and then change all his things over from the old suit into the pockets of the new one and leave that where he had left the old suit. He would put it on the next morning and was just as likely as not to go down to the machine works or elsewhere and get the new clothes covered with oil or chemicals.

"It was a matter of years before the general public acquired even a rudimentary knowledge of the art of incandescent lighting. This ignorance gave rise to a long list of most ludicrous incidents. The lamp works shipped some lamps to a customer, forwarding therewith the usual memorandum of shipment, which in this case read: '100 lamps, 110 volts.' The customer returned the memorandum with this note written at the foot: :Lamps received, but cannot find the volts in the package.'

"Developments of the new art of incandescent lighting came thick and fast from Mr. Edison in the early eighties. Improvement followed improvement with dazzling rapidity, making serious work for the Standardizing Committee which used to meet late at night. The manufacturing shops and '65' were buzzing hives of industry. Real money, however, was a scarce commodity. Mr. Edison had been obliged to finance the organization of the shops himself, and in doing so had to a large extent mortgaged his future. He had full faith in future success, but his original backers had not. When he asked them to finance his shops, their pedal extremities became frigid. As soon as we got down to real business, there was some fearful and wonderful financing done when the pay rolls of the tou shops had to be provided at the week ends. It seems like a dream, or rather nightmare, as one looks back on it now. Perhaps it might be likened to fleas on a dog,—kept us so busy that the other troubles were temporarily forgotten.

"Late one summer afternoon in 1881 Mr. Edison was sitting in Major Eaton's office talking with him. I was at my desk in the same room. The door opened and in came F. R. Utton, the manager of the lamp factory, which was then a small wooden building at Menlo Park. (Mr. Upton was the one who, about a year previous to this time, had gone from Menlo Park to New York having on his arm the market masket containing all the incandescent lamps in the world).

"'Hello! Upton,' said Mr. Edison. 'How are you making out?'

"'Fine,' replied Mr. Upton exultantly. 'We finished a thousand lamps today.'

EARLY TYPES OF EDISON ELECTRIC INCANDESCENT LAMPS IN 1880

"Mr. Edison said nothing but seized a pad of paper and figured for a few minutes. Then looking up, he said, 'In fifteen years you'll be making forty thousand a day.' I suppose our incredulity showed on our faces, but Mr. Edison merely smiled and said, 'You'll see.' As a matter of fact, the lamp factory was actually turning out about 45,000 lamps a day in 1896, which was fifteen years after this conversation. And this number per hour is not unusual today.

"The other incident above referred to is perhaps still more striking, as Mr. Edison backed up his faith with his money. The selling price of lamps in the early days was eighty cents each. It cost over a dollar to make them, and the financial men were worried. The future to them was next week. They couldn't see any further, but Mr. Edison did. He said, in effect, 'Give me an exclusive license to manufacture during the life of the patents and I will agree to supply you with all the lamps you need at forty cents each.' They jumped at the chance and the contract was made. Mr. Edison lost money steadily for three years, but owing to improvements he had made in processes of manufacture and to the rapid development of the business, he made more money in the fourth year than he had lost in the three preceding years. After that the lamp works made money fast and

within a few years afterward used to pay a dividend on its stock every Saturday."

Because the electric incandescent lamp is both a scientific and an industrial achievement in the aspects of its development and perfection, as well as an invention that has proved to be of such manifold utility in increasing the comforts of humanity, it is but natural that those actively engaged in the manufacture and distribution of Edison Mazda lamps should participate in making Edison Day one of the red letter days in the lighting industry. The Edison Lamp Works of General Electric Company have therefore launched coincident with the anniversary the most complete and comprehensive campaign of propaganda for the purpose of popularizing electric lighting ever undertaken. A great national movement of this kind at such a propitious time cannot but intensify the common interest of the electrical industry, public service and the general public, and result in a tremendous impetus in favor of electric lighting.

The campaign should act as a decided stimulus to electric lighting, even in the face of present negative business conditions; for it cannot be said that the lighting business is so much affected by the existing adverse trend of affairs as some other lines of endeavor. The scope of the propaganda will be nation-wide and will embrace nearly every avenue of public appeal. The manufacturers of Edison Mazda lamps will cooperate with the lighting companies and dealers to bring before the public on and preceding Edison Day many interesting features in connection with the development of the electric incandescent lamp by Edison, as well as the numerous possibilities for economy, safety and convenience through the general use of electric lighting. Edison Day will not only mark a period of honoring nationally the inventor, but also of educating the public in the many advantages of electric lighting, which is the first step and true basis of sales promotion.

In addition to this remarkable increase in lamp efficiency, lighting companies have been able to decrease their rates so that ten cents today will actually buy as much electric light as a dollar would in the earlier days. This is perhaps the most important factor of all to the public in general. Edison Day will therefore emphasize prominently the fact that, in spite of the general gradual rise in the cost of living along other lines, electric lighting is in contrast one of the few necessities the cost of which has decreased to such a remarkable extent.

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MADE IN AMERICA

Windham Manufacturing Co., Woolen Fabrics

South Windham, Me., Sept. 25, 1914.

Editor Textile World Record:

I was much interested in the article "Dyestuffs, Patents and Textiles" in your September issue and am in complete agreement with your position regarding the need of a revision of our patent and tariff laws in order that American made textiles may be dyed with American made dyestuffs. I take the opportunity of expressing my sympathy with the principle involved by enclosing a cartoon illustrating the situation.

Wsihing you success, I remain,

Yours very truly,

Frederic W. Freeman.

OCTOBER, 1914. AMERICAN MANUFACTURER: "I GUESS THAT SIGN WAS RIGHT AFTER ALL."

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Silk hose was first worn by Prince Henry, afterwards Henry II of France, in 1537.

LEGISLATION GOVERNING THE MANUFACTURE AND SALE OF TEXTILES

From a paper read by C. E. Wry, Secretary of the Iowa Retail Clothiers' Association, before the Wisconsin Clothiers' Convention at Milwaukee.

That I may not be accused of opposing laws that offer protection to the consuming public, I wish, before entering upon the discussion of my subject, to make clear to you my own position regarding legislation for regulating the manufacture and sale of merchandise, whether it be textiles and its manufactures or merchandise of any other class or kind. I am unqualifiedly in favor of national and State legislation that will give to the consuming public the fullest possible protection against fraud and misrepresentation in the merchandise they buy. But I am just as much opposed to the enactment of laws carrying provisions that are not only impractical, but impossible of enforcement. We already have enough dead letter, inoperative laws.

Beginning with the Grosvenor shoddy bill of 1901 there has been a more or less continuous agitation for a national law requiring the labeling of textiles to show the materials of which they are composed. From one to a half dozen bills of the kind have been considered by nearly every session of Congress since that time. The Grosvenor, the Murdock, and the more recent Meyer and Lindquist bills are fair samples. Because of impossible, yet absurd, provisions in them not one could ever have been enforced had they become laws. Almost without exception the text of all the so-called "pure fabric" bills introduced in Congress during the past 15 years indicates that their authors had made absolutely no study of the subject on which they proposed to legislate. Doubtless some of these bills were prepared in honest ignorance, and it is just as certain that others were merely a play of cheap politics, offered with the one object of gaining popularity by posing as the defender of the consumer, or the producer. For instance, in 1912 the eleventh congressional district of Georgia produced 2/3 of all the Sea Island cotton grown in Georgia, and nearly 40 per cent. of all the Sea Island cotton grown in the United States during the same year. Eleven of the sixteen counties making up the eleventh Georgia district are heavy producers of Sea Island cotton. The Hon. Randall Walker, whose first term as Congressman from that district expires March 4, 1915, recently introduced a bill (H. R. 17386) which would provide for labeling cotton fabrics to show, not only the percentage by weight, of cotton present but also the percentage by weight of Sea Island or Egyptian cotton in the goods. Do you think that bill will prove a political injury to Mr. Walker in the 11th Georgia district during his campaign for reelection this fall? Mr. Walker will need to avoid letting his constituents know that his bill would be a dead letter if made a law, for, of course, the different grades of cotton cannot be distinguished from one another when made into cloth. And right there is one of the impossible features that has been common to all these so called "pure fabric" bills. The requiring of a statement of one kind or another showing the percentage or amount of different grades of the same fiber used in manufacturing the goods. A requirement that could not be enforced because of the impossibility of determining either by chemical or physical analysis of a fabric, the percentage it contains of different grades of the same fiber.

Take shoddy and wool for instance, and all these fabric bills make that one of their main requirements, that the percentage of shoddy used in woolen goods shall be stated, there is no chemical or microscopic analysis that can determine with certainty the presence of shoddy in woolen goods Chemists the world over are agreed on this.

As the woolen division of the textile industry is the one in which we as clothiers have the most interest, I want to discuss more at length the effect of a labeling law in this branch. I have tried to show how impossible it would be to enforce such a law as applied to wool and shoddy. Now I want to direct your attention to the injustice that could result not only to the manufacturer of textiles, but to the consumer as well if it were possible to enforce such a law.

Much of the popular support that has been given to these "pure fabric" bills has been because the general public has very little or no accurate knowledge of textiles. Take in the matter of shoddy. The general public, and for that matter a great many clothiers as well, have an entirely erroneous idea as to what shoddy really is. The word itself has taken on a meaning with the general public signifying something absolutely worthless. I have even heard this remark in a discussion of a man's character, "Oh, he is shoddy," meaning that he is worthless. There are many grades of wool shoddy, but they group under four general divisions, namely, shoddy, mungo, extract and flocks.

Shoddy is applied to fibers manufactured from waste yarn, soft knitted fabrics, flannels, shawls, etc. The fibers range from 3/5 to 1 1/4 inches in length. Here is a sample of fine worsted roving waste worth 55 cents per pound. This is garnetted worsted yarn waste made from yarn waste such as this sample, and worth 33 cents per pound. Note the long staple of this waste, and its strength as it is twisted or spun. Now compare these two samples of shoddy with this sample of pure wool, which is shearlings wool, very short staple, you notice, about a two or three months' clip; or with this sample of wool in the grease. This fleece was evidently taken from a sick sheep or from one whose feed has been too suddenly changed. The health and care of the sheep has a great deal to do with the quality of its fleece. Note the broken places in the strands. This sheep very nearly lost its fleece. Notice how easy the strands are broken.

Under a labeling law, goods manufactured from the first two samples would be branded "shoddy," while goods manufactured from the last two would be branded pure wool. Which fabric do you think would give the better service to the consumer, the one made from the superior shoddy or from the inferior pure fleece wool? What value to the consumer would a label be in this instance? Decidedly it would do an injury.

Under the head of "mungo" comes the waste

wool from the hard spun fabrics like tailors' clipping, all wool rags, etc. Here is a sample of a good grade of rag shoddy or mungo. Its fibers are shorter than the other samples of shoddy you notice, ranging in length from 1/5 to 3/4 of an inch, this being due to the more severe treatment in the "pickers" made necessary because of its closer, tighter weave of the cloth from which it was reclaimed. Mungo is rarely used alone for yarns, but generally with new wool or cotton. A fabric made from this quality, mixed with this fine clothing wool worth 55 cents or this fine quarter combing wool worth 48 cents, would under a labeling act be branded "mixed goods," while a fabric made from this kempy wool full of dead hairs that will not take wool dye, or from this grade of wool, which is a mixture of under clips, wool from dead sheep, etc., or to go still further, from this filthy mess known as clips which is about 5 per cent. of a very inferior wool and 95 per cent. sheep dung, and worth about 1 1/2 cents per pound, would be branded "pure wool." Can you see any value to the consumer in such labeling?

Here are two fine samples of redyed extract. Extract is used in many varieties of fabrics, it gives a soft finish to the goods. It is valuable in making fabrics like mackinaws and blankets. The manufacturer of one of the highest priced and best known lines of mackinaws, who makes his own mackinaw cloth, told me recently that the thing that had made their mackinaw line so beautiful and so popular was because they blended in 50 per cent. of extract of the fabric. Here are two samples of mackinaw cloth that contain 50 per cent. of wool extract and 50 per cent. of a fine quality wool. Note the soft, beautiful finish These two are made from pure fleece wool, not nearly so fine. What value to the consumer would it be to have a ticket attached to these two pieces of goods stating what the goods contained?

The last class of shoddy known as "flocks" consists of the short refuse wool, the shearings from wool goods, the waste rubbed off in fulling machines, the sweepings of the woolen mills, etc. In other words, really wool dust, most of the fibers only long enough to have two ends. The only use of flocks in fabrics nowadays is to weight some certain kinds of goods, and to coat waterproof garments. Flocks are used mostly in the manufacture of the cheapest grades of felt like this sample, in the making of felt boots, felt roofing, surfacing of some wall papers and stuffing horse collars. This sample of flocks is the nap sheared from woolen goods in the process of finishing. This sample is the waste from the fulling machine. They are each worth on the market about 1 1/4 cents per pound. I believe if we could trace the matter back, we would find flocks responsible for the general public's idea of shoddy. Years ago when there was demand for very cheap woolen suits, quantities of flocks were used in the manufacture of low grade woolens. Some of you doubtless remember those $3 and $4 woolen suits, and how carefully they had to be handled to keep from punching holes in them. There is no longer a demand for goods of that kind and they are no longer manufactured, yet the memory of them lingers and I think represents the common idea of shoddy.

Yet under a labeling act, if goods should be made of 50 per cent. flocks and 50 per cent. of an inferior wool, they would of necessity be tagged the same as a fabric made of 50 per cent. fine worsted roving waste and 50 per cent. of high quality quarter combing wool. What value to the consumer would there be in such labeling? Instead of branding shoddy inferior, the public should look upon it as a highly important factor of society. Its use is an example of that conservation which helps to keep down the cost of living.

Entirely aside from whether it is an advantage or a disadvantage to the consumer that shoddy or other fibers be used with wool in the manufacture of fabrics, their use is an absolute necessity in order to clothe the people. It is a fact not generally known that if the entire world supply of wool were pro rated equally, the per capita allowance per year for all people living outside of the tropics would be 14 ounces, about enough to give a man a suit of clothes once in four years. In a way these figures are a little misleading. In figuring the population residing outside the tropics, China and some other countries of Asia where very little wool is used are figured in. But to apply it to our own country. In 1909 the wool and wool goods imported and the wool grown in the United States were equivalent to 372,857,170 pounds of scoured wool. This is a per capita allowance of approximately 3 3/4 pounds, not enough for a good pair of bed blankets. From this we had to make the woolen underwear, clothing of every kind, wool hats, carpets, blankets, and the thousand and one items manufactured from wool. Of course there would be added to this the manufactured woolen goods we imported, but figuring all in all it is plain to see the absolute necessity for using these numerous wool substitutes.

Now let us consider a labeling act as applied to cotton goods. Here are two samples of goods both made from pure cotton. One retails for $3.25 per yard, the other for 4 cents per yard. Both would be labeled pure cotton. What value would that label be to the consumer?

I could go on indefinitely with examples of this kind applied to silk, linen and all the other fabrics, but I have already given most too much time to this point. If those I have used have not demonstrated the impractical feature of labeling, any number more would not. Of course you know there are immense quantities of goods manufactured from pure fleece wools, without any mixture whatever either of shoddy or other fibers. All wool worsteds, for instance, are made from pure fleece wool. Shoddy cannot be used in worsted yarn.

There is one thing more I want to bring out regarding this requirement for labeling goods. A very small part of the fabrics manufactured nowadays is sold to the consumer from the piece. The bulk is sold in made-up garments. If we had a law requiring the labeling of all fabrics there would hardly be room on a suit to attach all the labels that would be required. There would have to be a label for the outside fabric, one each for the coat lining, the vest lining, the canvas, the hair cloth, the taping, the padding, the sleeve lining, the pocketing, the skirting in the trousers, the waist band, and so on. With women's garments

it would be even worse, it would be nothing uncommon at all to find twenty-five or thirty different fabrics in a woman's suit and waist. Do you think all these labels would help the consumer to know more about the goods purchased?

We all know there are plenty of abuses, misrepresentation and fraud in the sale of goods of all kinds. In our industry goods made of wool mixed with cheap silk waste or with cotton are sometimes sold by dishonest or ignorant dealers, as "all wool." Cotton is often sold as linen. Artificial silk is sold as silk, and this practice is increasing as new processes for producing and working artificial silk continue to be discovered. There was 590,800 pounds of artificial silk used in the City of Krefeld, Germany, alone, last year, chiefly in the manufacture of men's ties. Mercerized cotton or lisle hose are often treated with soap and tartaric acid or some other scrooping process which gives it the feel and appearance of silk, surely meant to deceive. But to my mind the worst abuse of all is the weighting of fabrics by the excessive use of sizing or other methods. Silks are weighted with tin, alumina, lead, and other materials. Cotton goods are weighted with excessive amounts of sugar and glue or some one of the other methods. Ducks and denims with clay or other substances. To add weight, silk hosiery is often steeped in rice water with a little glue added. Of course in some fabrics a certain amount of sizing must be used, but the excessive weighting of fabrics is a fraud and should not be allowed. I was told the other day by a prominent manufacturer of ladies' skirts who uses large quantities of imported goods, that practically all the French skirtings fabrics were excessively weighted, some to such an extent that it was impossible to refinish the goods, for to take the sizing out there would be nothing left to refinish.

There certainly is great need for legislation that will protect the purchasing public, and it should be our duty as merchants desiring to deal honestly to do all in our power to get such legislation. But the pure fabric bills and labeling acts such as have been proposed so often will not solve the problem.

Abuses in the textile industry are not one bit more common than in other lines. Every class of merchandise sold has its deceits, frauds and misrepresentations. What we need is a basic law that can be applied to every class and kind of merchandise. A law should be passed by Congress forbidding all false description of all goods offered for sale and it should apply to oral as well as written descriptions. Similar laws should also be enacted by the several states so that it would apply to intrastate as well as interstate, thus covering every transaction from the origin of goods through to the consumer. Such a law has been in force in England for 27 years and has proved an effective means of protecting the public.

Some of the most important court decisions under the British Act have been in textile cases. One recent decision in a textile case will serve as an example of the effectiveness of the Act. This is quoted from the report of the case by U. S. Consul, Augustus E. Ingram, Bradford. Suit was brought against Albert Rendell of Bradford for selling goods to which false trade descriptions had been applied. The goods in question had been described as "new art silk," "new tussou" (tussah), and "silk stripe" voile. The case of the prosecution was such that each of these descriptions amounted to a statement that each piece of material was composed of silk and that these descriptions were false, inasmuch as each material was composed not of silk, but of a mere imitation of silk, attractive, indeed, to the eye, but of less value than the genuine article.

The defendant's case was that the word "art" in this connection was a contraction of "artificial" and that this use of the word had become so common in the trade as to exclude the possibility of any other meaning. The Bradford magistrate, following a decision in Leeds, stated that the words "Art silk" written in this case with a capital "A" and without a stop (or period) after the "t" would to any ordinary person mean a fabric made of silk of which the texture or design, or both, bore an artistic character; and so a case of false trade description was established, conviction was entered, and fines assessed.

With a general law of this kind as a base, supplementary laws could be passed to fit particular cases; for example, against the excessive weighting of fabrics, or like the Mass. law that forbids the sale of dress goods containing more than a specified amount of arsenic. Such a law would apply to every class and kind of merchandise sold, and would be a practical and workable measure affording real protection to the consumer. I am violating no confidence in telling you that I know a bill based on this principle is now being drawn by a prominent Senator, and will be introduced at the next session of Congress. It is my hope that when the bill comes before Congress, every retail clothing organization in the country will urge its passage.

Now in conclusion I wish to say that in my investigation of this subject during the past two or three years, I have been greatly indebted to Samuel S. Dale, editor of the Textile World Record of Boston, and to his paper for valuable information. In presenting the subject to you today, I have quoted liberally from articles by Mr. Dale and other authorities. For the wool samples I have used today I am indebted to Sol Schuerman of the Schuerman Woolen Mills.

In 1770 the first shipment of cotton from America to England was made, while in 1791 189,361 pounds were imported.

In 1850 John Mercer took out his patent for the process now known as mercerizing.

The United States imported in the fiscal year 1913, 1,942,177 pounds of artificial silk yarn valued at $2,385,350, and other artificial silk manufactures 186,086 pounds, valued at $892,434. Germany supplied of both $1,165,233 worth.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

CREPE FABRICS

BY ROBERT DANTZER

Translated from the French by the Editor of the Textile World Record

(Continued from September.)

The extent of the shrinkage depends upon the strength of the caustic solution which is used at 15° to 32° Be. The temperature is of great importance. The bath should be kept at a temperature of 0° to 10° C., according to circumstances. The lower temperature should be used for the strongest solutions, otherwise the wool and silk will be affected. As soon as the desired shrinkage is obtained the goods are rinsed in clear water, then in an acid bath, after which they are rinsed again in water. The apparatus used is very simple.

The caustic solution is run into an iron tank equipped with heavy rollers over which the goods pass. At the end of the tank are squeeze rollers covered with cotton cloth in order to reduce the tension on the goods to a minimum. After coming from the caustic solution the pieces are rinsed, soured and rinsed again in wooden tanks. The temperature is lowered by the artificial refrigeration, produced by the sulphuric acid process. In this way the shrinkage can be adjusted so as to produce a very pronounced crepon or a very faint wavy effect.

M. Dosne has produced on cotton goods a combined moire and printed design Regular and parallel stripes are printed, the stripes being separated by white spaces of the same width. A colored gum is then superimposed by means of spirally engraved rollers. The goods are next passed through the caustic solution. A shrinkage produced by the caustic and the superimposed pattern give the effect of a printed moire.

The cotton crepe, Fig. 36, is produced by mercerizing without tension. The goods are singed and then treated with diastafor to remove the sizing, after which they are subjected to the action of a hot 5 per cent. solution of caustic soda for about 20 minutes. An important point in this class of work is to handle the goods in the open width and at the same time avoid tension widthways. This work requires specially trained operatives. It is necessary to avoid pressure and tension and

FIG. 36

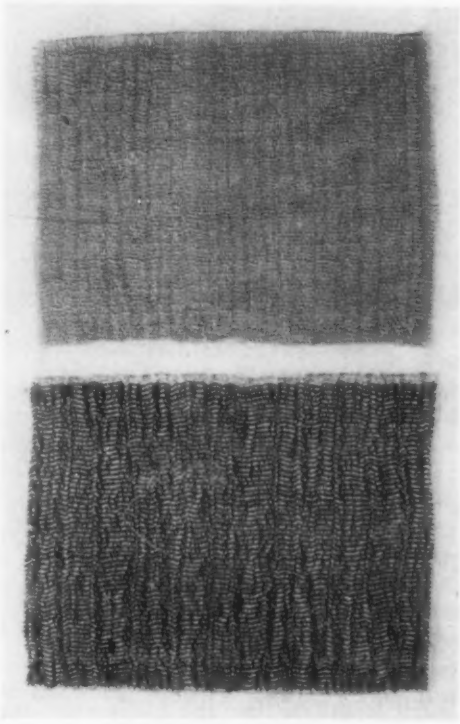

FIG. 37

particularly an intermittent strain on the cloth. The goods are next boiled in an ordinary tank containing about 5 per cent. of soda and 2 per cent. of resin soap.

In order to produce an attractive appearance, the cloth is run twice through the liquor then boiled and the process continued. Usually boiling for an hour is suffi-

cient. After that the goods are rinsed first in hot water, then in cold.

For dyeing light and medium shades it is necessary to bleach the cloth. This should be done in a cold solution of hypochlorite of soda. The duration of the immersion depends on the strength of the liquor. When the chemical effect is continued for a suffi-

FIG. 41

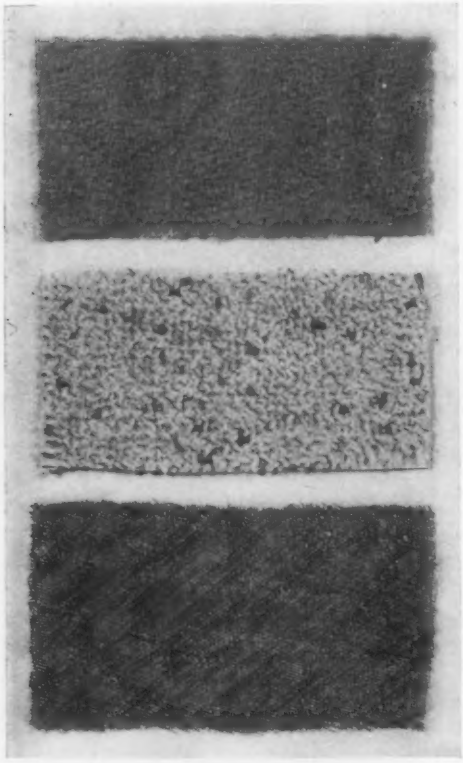

FIG. 42 AND 44

cient length of time the goods are rinsed in clear water, scoured in a sulphuric or hydrochloric acid solution and then rinsed again in water. They are then dyed, not in the jigger, but over reels in a dye tub. The tension produced by the jigger destroys the crepon effect. As the colors must be fast to washing it is generally necessary to subject the goods to a subsequent treatment for very dark shades or to use the sulphur dyes. For blue goods Diamine F F is used, this being reinforced with a trace of Diamine B, the dyes being used along with sulphate of soda and Turkey red oil at 60° C. For light green Diamine Sky Blue F F is used also Thioflavine S and Diamine Yellow Solid. For light grey Diamine Black is employed with a trace of brown or red. For medium shades diazotized paranitraniline is employed.

Crepons made of cotton and artificial silk are handled in the same way as all cotton crepons. It is necessary to avoid getting the shade too dark on the silk. For this reason the goods are colored at a low temperature.

Wool and cotton crepons are mercerized in order to cause a shrinkage of the cotton. It is frequently necessary to dye these goods in two shades. As the mercerized cotton absorbs the dyestuff easily the process presents no special difficulty. The wool is colored in slightly acid or neutral solutions. The wool can also be dyed in acid solutions without affecting the cotton, after which the cotton is dyed cold. Another method consists in coloring the cotton with dyes that resist acids at a boil, then dyeing the wool. Still another process consists in coloring the cotton in the yarn before weaving, the wool being dyed in the piece. Crepon goods made of mixed artificial silk and wool are treated the same as all-wool crepons as the dyeing process does not affect the artificial silk. The whole material is colored by passing through a liquor containing phosphate of soda and substantive dyestuffs. The goods are then rinsed, soured with acetic acid and dried. Chloride of zinc enables the same effects to be obtained as with caustic soda. If a cotton fabric is printed with a solution of chloride of zinc at 72° Be. and dried in a chamber at 100° to 120° F., the printed portions shrink, causing the crepe effect on the portions that are not printed. This method is also employed for mixed fabrics such as wool and cotton, silk and cotton, etc., and gives effects similar to those produced on silk goods by the Garnier and Voland process.

In the finishing of wool crepe various substances are employed, including acids, acid salts and reducing agents, citric and tartaric acids, chlorides of zinc and lime, the bisulphites and chloride of tin. All of these materials must be employed in concentrated

form. The appearance of the goods are altered if they are steamed too long or the pressure is too high.

Sieffert called attention to the action of sulphocyanate which, although very strong, nevertheless has the advantage of affecting the tissue less than other substances. The color used contained 1 1/2 parts of sulphocyanide of calcium for 1 part of gum traganath. Stripes are printed with this material after which the goods are dried and steamed in a special apparatus. The pieces are held lightly by a twine netting passing in a horizontal direction back and forth several times and are thus subjected uniformly to the action of the steam. Although the crepe finish on wool stands washing and stretching very well, this method of handling is necessary because the goods are heavy and if suspended vertically the strain produced by the weight of the material would prevent the necessary shrinkage. In finishing silk crepe concentrated acids are used to give a shrinkage of 30 to 50 per cent. Plain silk goods immersed in the acid contract and assume the appearance of crepe de chine. If the goods are printed with a resist before passing through the acid the portions not printed are the only parts which shrink, the remainder assuming a crinkled appearance. This process was used for a long time at Lyons by Giller & fils as well as Garnier, Voland & Co. The last named firm obtained new effects by mixing tussah and ordinary silk. When subjected to the acid bath the ordinary silk shrunk while the tussah remained unchanged.

Fig. 37 is a crepe made with silk warp and wool filling, the crepe effect being obtained by the shrinking of the wool. Fig. 38 is a crepe made with a cotton warp and silk filling, the effect being produced by a shrinkage of the cotton.

Mercerizing has also been employed in the manufacture of fancy yarn. Ply yarn made of wool and cotton twisted together is passed through the caustic solution which causes a looping of the wool. The yarn can also be treated so as to cause the wool to shrink and the cotton to form the loop.

Crepes with Fancy Yarn

I refer to this process only to make the review complete. Figs. 39 to 42 show various samples of this class of goods. The fancy yarn is made with different colors forming loops.

Crepe Effects by Finishing

This process is but little employed except for silk goods. English crepe is made with raw silk of two to four ends with 125 to 175 turns of twist per inch. Usually the goods are made 32 inches wide with 75 to 90 threads per inch in warp and filling. The pieces are woven 160 yards long and measure from 18 to 50 square yards per pound.

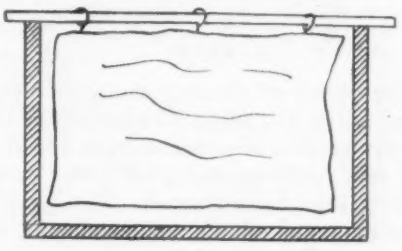

FIG. 45

The weaving of these goods presents nothing out of the ordinary, but the processes of dyeing and finishing are but little known. The pieces being folded are sewed at three points to form loops of cotton twine by which the goods are supported on the rod, as shown in Fig. 45. The pieces are then suspended in a wooden tank as shown and are saturated with lukewarm water, after which they are treated with a solution of valonia at 120° F. At the end of three to four hours the goods are rinsed in clear water. Sumac, nut galls and similar materials may be used in place of valonia. The goods are dyed with Naphtylamine Black 6 B and after rinsing are impregnated with a solution containing 70 to 140 grains of dextrine per pound of the solution. The pieces after being dyed are stretched diagonally so as to draw the warp and filling threads obliquely to each other. This work is done with a special machine which requires three operatives to draw the selvages. The pieces are then run between engraved

rollers. The upper roller is bronze, the design being cut very deep. It is about 9 inches in diameter and heated from the inside. The lower roller is paper and twice the size of the upper one. On entering the machine the piece is stretched slightly and passes over a steaming plate. When leaving the machine the cloth is rolled without tension. The pieces are unrolled as quickly as possible and the operative begins to draw the cloth straight.

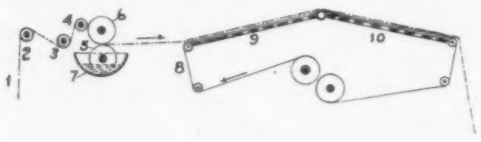

FIG. 46

The object of drawing the goods out of shape in the first place is to enable the fabric to receive the impression from the deeply cut rolls without being cut and without causing folds to be formed. The goods are next impregnated with a solution of resin and alcohol made as follows:

Alcohol	parts 100
Antimony black powder	1
Shellac	140
	parts 241

This mixture is used for lustrous crepes. For a dull finish from 4 to 8 parts of lampblack is added.

Fig. 46 shows the principle of the impregnating machine. The cloth, 1, passes over and under the glass rods, 2, 3 and 4, then between the rubber rolls, 5 and 6. The roll, 5, runs in the solution of resin in the tank, 7, the solution being carried in this way to the cloth. The goods are dried immediately by passing over the endless apron, 8, and subjected to the action of steam, passing through the plates, 9 and 10, for about 20 feet. The crepe is then folded by hand in order to prevent its being pulled out of shape.

Light goods are passed twice through the gumming machine. Because of the rapid evaporation of the alcohol a part of the gum solution forms in lustrous drops on the cloth. It is necessary to melt these drops so that they will become absorbed by the fiber. This is accomplished by a machine in which the piece is drawn by an endless metal apron at a speed of 33 meters per minute, passing over two rows of gas jets. The heat melts the drops of gum, but should not be sufficiently strong to destroy the finish. The goods are passed through this machine from one to three times according to conditions. To retain the finish it is necessary to avoid all tension on the goods in both the wet and dry state.

Fig. 44 is a sample of English crepe used for mourning costumes. Fig. 45 is an imitation worsted crepe called "crepoline," made with a weave which gives the effect of the English crepe. Fig. 46 is a zibeline fabric made with a cotton warp and wool filling. After napping the goods are mercerized, which produces the wavy effect.

[A number of samples to which reference is made in the above article cannot be shown to advantage in the illustrations, but can be examined at our Boston office by anyone interested.—Ed.]

ARTIFICIAL SPUN SILK YARN

New York, Sept. 15, 1914.

Editor Textile World Record:

I find on page 97 of the September number of the Textile World Record an inquiry about artificial spun silk yarns. I am pleased to give you a little more information on the subject, having made arrangements with a Swiss spinner to import such yarns.

I enclose for the benefit of your readers a few samples of the yarns which are now spun up to No. 30 metric system (No. 50 3/4 cotton count). Sample No. 1 is an ungassed filling yarn for weaving purposes. No. 2 also ungassed is used for the knitting of sweaters and toques made either in full of this new yarn or just in parts as strips. No. 3 is a hard twisted (pearl twist) yarn used for embroideries. No. 4 is a singed yarn.

The single yarn is quite new, as it was a rather difficult problem to singe such yarn To show you how well these yarns take the colors and how soft they can be made by special dyeing I enclose two colored yarns, unsinged and singed. Both these yarns are well adapted for silk stripes in woolen cloth

and for knitting goods. Of course many other places will be found eventually where this yarn can be used to advantage. The price f. o. b. New York varies from $1 to $1.50 per pound, according to number and whether raw, singed or dyed.

I import all kinds of these yarns.

Alfred Suter.

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DEALING WITH SHEEP KILLING DOGS

From the Bulletin of the Department of Agriculture

The State of Virginia at the recent session of its legislature passed a novel dog law, which it is believed will enable that State to raise sheep successfully on a large amount of waste land heretofore idle. This law makes it a misdemeanor punishable by a fine up to $50 for the owner to allow his dogs to run at large in the country.

This waste land, while entirely suitable for sheep raising, was not well adapted to cattle, for the reason that winter feed in those districts was too high to make the wintering of beef cattle profitable. All that stood in the way of a profitable sheep industry was dogs, which were kept in large numbers in the shanty settlements. These dogs, which were rarely fed at home, lived on the young game during the spring and summer and preyed on the sheep whenever they were not watched, and especially in winter.

The old dog-license law merely meant that a dog was commonly $2 a year hungrier for sheep. The general law permitted a sheep owner whose flock had been ravaged to sue the owner of the dog, but commonly the owner owned nothing but dogs and the sheep farmer could not recover. Moreover, if the sheep owner shot a stray dog on his premises, the owner of the dog could sue the farmer for damages. The farmers of Virginia grew tired of having their waste land idle and finally induced the legislature to pass the accompanying dog law. This law, when adopted by a county, makes it a misdemeanor for the owner of a dog to allow that dog off his own property unless he is with the dog. In the case of incorporated villages and towns the law permits the licensing of dogs, but makes it a misdemeanor for them to be alone outside of the incorporated limits.

The indirect effect of this law is to allow any farmer to shoot a lone dog on his property. The owner of the dog, before he can bring suit for damages for the killing of the dog, necessarily must establish proof that the dog was at large and thus subject himself to a fine up to $50.

Although the law was passed very recently, a number of counties have signified their intention of making it a county rule, and in these counties owners of waste land are already making preparation to establish flocks of sheep.

The text of the law is as follows:

To Prohibit the Running at Large of Dogs, and to Provide a Penalty for the Violation Thereof.

Be it enacted by the General Assembly of Virginia, That it shall be the duty of every person owning or having in charge any dog or dogs, to at all times confine such dog or dogs to the limits of his own premises or the premises on which such dog or dogs is, or are, regularly kept: Provided, That nothing in this act shall be construed to prevent the owner of any dog or dogs, or other person or persons having such dog or dogs in his or their charge, from allowing such dog or dogs to accompany such owner or other person or persons elsewhere than on the premises on which such dog or dogs is, or are, regularly kept.

Any person violating this act shall be deemed guilty of a misdemeanor and shall be fined not less than two nor more than fifty dollars, one-half of such fine to be payable to the officer or other person furnishing the evidence upon which such owner or other person having such dog or dogs in his charge is convicted of such violation.

This act shall not apply to the running at large of any dog or dogs within the corporate limits of any city or town in this State that require a license tag to be kept on dogs. But this act shall not apply in any county in this State until the same has been adpoted by the board of supervisors of such county.

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A FAST BROWN DISCOVERED AT LOWELL

Has anyone suggested making use of the Lowell city water as a feasible substitute for German dyes? A very fashionable shade of red-brown can be obtained by the simple immersion of a fabric in the city water overnight, and the dye will be very nearly fast color at that. Until the filter plant is done, let no one despair of the future of our colored cloths.—The Lowell (Mass.) Courier-Citizen.

GERMAN PATENTS IN ENGLAND

From the Textile Mercury

The measures taken by the Government in respect of British patents owned by alien enemies stand in no need of justification in principle. Patents of invention are granted to subjects of the Crown because it is believed to be for the good of the realm that property in intellectual efforts should be allowed. The grant is made with limitations as to time and working, conceived in the interests of the community. Grants are made to aliens in exchange for the treatment meted out by their governments to the inventions of Englishmen, and with a view to the advantage of this country. When the amity of nations is rudely broken by force of arms, and the opportunity of drawing supplies of the patented article from outisde the Kingdom is ended, the Government has to decide between two courses; either the English community is to be deprived temporarily of its ability to make use of the patented article, or means have to be improved to allow of the manufacture within the realm of goods made in accordance with the patent.

In these circumstances the Government has made provision for the grant of licenses to manufacture under the patents and trade marks of enemy patentees, observing in this act a degree of scruple which we trust will be emulated by the enemy. If the British Government had accepted the morals of the German military, it would have ruthlessly thrown aside all protection of enemies' property, and have encouraged all and sundry to make free with rights that have been conceded to German subjects. That course would doubtless have led to reprisals and to the forfeiture of any rights held by British subjects under German patents, but the balance of advantage might have been ours. Fortunately or unfortunately, a different code has been accepted, and there is to be no cancellation of German and Austrian patents during the war, and none later unless the Austrian and German Governments cancel the patents of English holders.

No advantage whatsoever is being taken of the state of war. Those who want licenses to manufacture under enemies' patents have to apply formally for them to the constituted authorities, and have to satisfy them—(1) of the reality of their intention to manufacture under the patent, and (2) that it is in the public interest that they should be allowed to manufacture. In a word, the measures are devoid of any symptom of a disposition to carry enmity into these civil relations. Public need is the single standard set up, and in order that public need may be effectually met power is reserved to grant these licenses not for the unknown duration of the war, but for a definite time—the unexpired period of the patent. Up to this point all is clear, and it rests only for the Comptroller to interpret the rules in the spirit in which they are intended. In that case applicants will have to face no avoidable delays, and will be spared the trouble of proving more than their own "bona fides" and the genuineness of the need for the goods. The ingenuities that have reduced the "British working" clauses of the Patents Act of 1907 to an inoperative level can be dispensed with in this emergency.

The matter is of prime importance to the textile industry through its chemical associations, and its need for dyestuffs and the new powers to suspend enemies' patents lie at the root of the questions which have to be considered by Lord Haldane's Committee. This committee of eminent chemists, chemical manufacturers, dyers, and officials, has to advise upon "the best means of obtaining for the use of British industry the chemical products, colors, and dyestuffs, of kinds hitherto largely imported from countries with which we are at war." Its deliberations may well have consequences transcending the moment, and the results of its efforts will be disappointment if they do not bring great eventual advantage to the color industry of this country. Recent experiences have delivered a blow to the easy assumption that we can safely depend upon external sources for supplies of essential commodities. They have given a fillip to the belief that this country needs a more symmetrical development of its industries, rendering it more independent by making these more self-sufficing. That idea will undoubtedly grow, and if in the course of its work-

ing-out our present enemies find the development unfortunate for them, they must blame not England. The omelette they have insisted upon making involves the breaking of more of their own eggs than they had allowed for; but these patent eggs are at least being broken without malice, and with great precision after careful counting.

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ENGLISH NOTES

By Our Regular Correspondent

The industrial situation is less chaotic than a month ago and although the damages have been by no means fully repaired, a distinctly more cheerful and confident tone can be reported. The news from the battlefield during the long weeks of the German advance upon Paris has not lent much assistance to the brightening of the business atmosphere. Yet the air is brighter and a success for the Allies' arms would brighten it still more. All panic has been cooled and wits have been collected. It is believed that we have seen the worst, that the slight economic improvement that has set in is the harbinger of further improvements to follow in no great length of time and that British industry will emerge from the war stronger than it entered. Five years hence—according to a prediction that has the support of some of the sagest textile men—England as a whole will be better off in every way than it was before the war. The calculation presupposes a victory which shall not be too long delayed. It assumes that on England will fall the greater part of the burden in restoring France and Belgium to their feet, and it counts somewhat less definitely on a bigger trade with Russia. That there will be victory, better international feeling and better trade every one believes and any present hardships are alleviated by the conviction that there is a good time coming.

* * *

There are undeniable hardships bearing somewhat irregularly upon the industries. There is still a moratorium for bills of exchange and advances are not got easily from bankers. There are still great uums unpaid and large contracts which are suspended. Marine insurance rates rule high enough to discourage exportation. Between other than old and trusted customers and suppliers, business is largely on a cash-with-order basis and all parties want their money soon. These influences operate more or less on everyone and restrict the volume of business that can be done. Then prices have still to find their level. The stock exchanges are closed and the value of securities is somewhat imaginary. The cotton market is shut except for spot transactions which take place at an artificial price of about four cents higher than the real value of cotton in the United States. This arrangement forced upon spinners by Liverpool interests has aroused the strongest dissatisfaction and there is a promise of a gradual approach to actuality in the undertaking of the Liverpool Cotton Association to confer with spinners as to the adjustment of prices in future. Although the wool market is open the topmakers fear the result of an attempt at holding public sales of any large quantities of wool. The raw material markets are being nursed. The time to set them upon their own feet has not arrived and although there will be an unpleasant shrinkage of values to face when that time comes, the loss will presumably be less than from action in the present.

* * *

In these circumstances it will appear that not many textile people are making money out of the war. Profit indeed ceased to be the prime consideration when war broke out and for at least eight manufacturers out of ten, the problem became one of avoiding losses and of doing one's duty to the country by taking the best care of the workpeople. Holders of stock of flannel, blankets, army cloth and some knit goods realized good prices on their holdings. It is not supposed that their new contracts are being executed at a loss, but in view of the falling off in private trade and the hungriness of competition new business could not carry excessive profits. The bulk of the business in army goods has gone naturally to the regular army contractors, some of whom work almost solely

for the Government. It is a grievance in some quarters that these mills are working night and day while some others are hard pushed to find two days' work in a week. Attempts to equalize matters as between manufacturers have been made with some little success, but the special business directly arising out of the war has gone mainly to the specialists. Worsted manufacturers have sought to have worsted substituted for woolen khaki cloth and one of them has paid a visit to the Army Clothing Department in the special interests of manufacturers in Bradford. It was shown to his own satisfaction that the woolen cloths used were peculiarly adapted for their own purposes and that worsted could not be substituted for them. Worsted spinners are however supplying warps for woolen-filled cloth and the scale of their orders can be gauged from the size of a single contract, 500,000 pounds of 2/24s —given to a large spinner in Bradford. The contract is by no means the only one secured for khaki worsted yarn and indeed there are slubbing dyers using five tons a month of yellow dye for this trade. French patterns of blue-gray woolen have been sent to be matched in the English market and French Government orders are expected. Rumors have been heard about Russian orders also, but it is unknown that any have been received.

* * *

The variation between different districts makes it difficult to generalize as to the state of employment. In the cotton trade there is a complete standstill in many mills, with all degrees of part-time working, up to full time. Out-of-work pay is being distributed by the labor unions in large aggregate sums and the distribution is systematically organized. Members from certain mills are notified to call at an appointed hour, so that the business can be transacted quickly. Upon the whole the production of cotton yarn and goods must be less than half the normal and the demand for such army supplies as bandages does not appreciably affect the situation. In the worsted trade, apart from khaki yarn-spinning, the production is at most only half the usual volume. The woolen mills have benefited from the army trade in a degree which compensates them for the decrease in private business. The jute industry holds up well and the linen mills are more concerned about supplies of material than loss of markets. Nottingham lace people are getting new business and looking forward to a much improved demand. Some disturbances of arrangements is felt in most districts by the enlistments for Lord Kitchener's new army, but the absentees can be replaced temporarily. The only statistics to display the contractions of trading are inconclusive for two reasons. The figures relate only to exports and they include shipments made before the declaration of war, but they may have their interest:

Exports of Yarns and Fabrics During August

	1914	Decrease in 1913
Cotton	£5,839,981	£4,629,939
Wool	2,136,029	1,434,860
Silk	133,754	77,897
Others	680,475	409,003
	£8,790,239	£6,557,699
	$43,951,195	$32,758,495

* * *

Employers have entered into the spirit of the occasion with a generosity creditable to themselves and not a few of them have guaranteed half-pay as a minimum to their workpeople during the continuance of the war. Men enlisting are promised reinstatement in their old jobs and those with dependents are given an allowance supplementary to their army pay. The representative allowance is $2.50 a week as long as the man is with the colors. The spirit in which this is made cannot be better displayed than by the notice put up by William Hall & Co. in their dye house at Newton Heath:

"Every able-bodied man employed by the firm is earnestly entreated to join the colors.

"Married men, or men joining with relations depending upon them will be allowed ten shillings per week as long as we have a penny left."

* * *

Notice will have been taken of the "War on German Trade" and of the efforts put forth by the British Board of Trade to advise

manufacturers of the extent and nature of the business done by German and Austrian manufacturers with certain markets. The information is conveyed in pamphlets which recapitulate the official statistics of the exports from these countries. For the rest, the pamphlets consist largely of extracts from consular reports received from countries abroad, being the observations of quite untechnical outsiders. It is more interesting than informative to learn, for example, from Bolivia that German prints are often "better-looking" than English ones; or to hear from Guatemala that British prints suffer from "what is locally regarded as inferior finish". Certainly the hints do not enable the Englishman immediately to book the German order. The American special commissioners' reports have been drawn upon freely, notably in respect of the cotton prints selling in Africa and Turkey. Thus in respect of South Africa, Manchester men are enabled to read in some detail the prices and particulars of the goods sold by themselves to this market. It is to be feared that the comments of the official observers have no more utility at the present time than when they were published some two, three or four years ago.

* * *

There have of course been complaints that the English manufacturer is not sufficiently on the alert to lay hold of the business recently enjoyed by the enemies. The singular opinion seems to have obtained in some quarters that the Englishman in war time would commit all the excesses in lengthening credit and debasing qualities that he refuses to do in times of peace. Some reluctance to make new samples has been recorded on better authority, but it must not be assumed that English makers are filled with conservatism or that they are all asleep. There are things that they cannot do with the means at disposal, but within the last month a great many measures have been taken to produce something which at a pinch can take the place of goods formerly bought from the Continent. Plenty of substitute cloths have been introduced to the satisfaction of domestic buyers. Plenty of users of foreign yarn have overcome their own prejudices far enough to discover that something English-made will serve. These adjustments to accommodate the home trade will be followed by others to suit foreign buyers when export business is again fairly into work. Too few either of the official or the unofficial reporters appear to understand that business is a matter of give and take and that the laws of customers' demands are not those of the Medes and Persians, but are amenable to superior force. The cessation of textile work on the Continent would mean much less to English and American mills could buyers not be counted on to make the best use of any facilities remaining at their disposal.

* * *

The heavy decrease in the general export of British yarns and fabrics finds no reflection in the figures relating to shipments to the United States. These last pursued the even tenor of their way during August and the business appears to grow more firmly established. Difficulties in making remittance, dull trade in America or delays due to curtailment of hours in this country may make an impression upon the totals presently, but in the meantime they grow. The table appended gives the amount of eight months' trading so far as it can be ascertained from the British official monthly tables:

Textile Exports U. K. to U. S. 8 mos. Ended 31 Aug.

		1913	1914
Cotton yarn	lb.	3,856,100	3,973,100
Cotton piece goods	yd.	26,252,400	40,076,000
Worsted yarn	lb.	42,400	1,523,400
Woolen tissues	yd.	1,484,900	6,329,200
Worsted tissues	yd.	5,300,900	22,585,600
Carpets and rugs	sq. yd.	85,500	346,000
Spun silk yarns	lb.	458,240	461,493
Pure silk broadstuffs	yd.	185,583	127,474
Mixed silk broadstuffs	yd.	287,611	948,135
Jute yarn	lb.	231,100	1,294,200
Jute piece goods	yd.	57,144,300	44,874,800
Linen yarn	lb.	1,403,500	1,754,600
Linen piece goods	yd.	72,992,000	75,717,500

At the time of the earliest known Asiatic invasion of Egypt, about 8000 B. C., the men wore a kilt of linen and the women a petticoat of linen reaching from the waist to the ankles.

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

This Series began in July, 1911

Translated and Revised by Samuel S. Dale

2. Transverse Stripes

The rules already given for forming longitudinal stripes with combination weaves apply also to transverse stripes. The different weaves must as far as possible break against each other at the line of contact. In longitudinal stripes raised effects are produced by warp weaves and depressed effects by filling weaves; the conditions are reversed in transverse stripes, the filling weaves giving raised effects and the warp weaves depressed stripes. Especially pronounced and arched cross stripes are obtained with the cross ribs, Figs. 1512 to 1517. Several examples of cross stripes in combination weaves are shown at Figs. 1608 to 1615.

Fig. 1608 ..... plain and rib
Fig. 1609 ..... plain and twill
Fig. 1610 ..... twill and twill
Fig. 1611 ..... crepe and twill
Fig. 1612 ..... satin and satin
Fig. 1613
twlll and plain with stuffing thread
Fig. 1614
double warp satin and double filling satin

The cross stripe in Fig. 1615 is made by removing points from the ground weave, which is a 13-shaft satin. This method of construction is especially useful when the cross stripe is made with but a few picks. The stripes must be woven with weave patterns of equal width or two repeats of one weave pattern must be equal to one repeat of the other. A 4 and a 5-shaft weave in a transverse stripe require 20 shafts; a 5 and and 8-shaft weave, 40 shafts.

3. Plaids

These weave patterns are combinations of longitudinal and transverse stripes, and call for the application of the rules already explained for drafting the two last named.

FIG. 1602

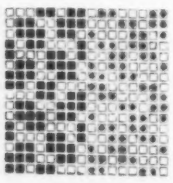


FIG. 1603

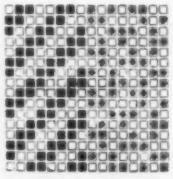
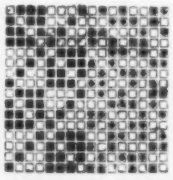


FIG. 1604



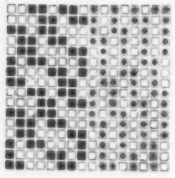


FIG. 1605

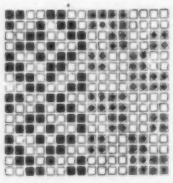


FIG. 1606

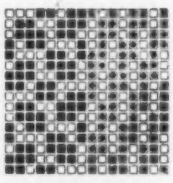


FIG. 1607

No general rules can be laid down for adjusting the stripes to form plaids. The draftsmen must adapt himself to circumstances and begin the weaves so that as far as possible they will break with each other along all lines of contact. An unlimited number of patterns can be made. A few typical examples are given at Figs. 1616 to 1633.

The first, Fig. 1616, consists of a 2 up 2 down twill ground with a 2 up 2 down basket stripe. To obtain a break on each side of the stripe the ground must comprise one thread more than an even number of twills. In this way the first and last threads of the ground are alike and break with the basket stripe.

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If the twill ground is made the exact size desired irrespective of the difficulty in effecting a break, it often becomes necessary to

FIG 1608

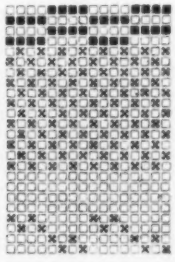


FIG. 1609

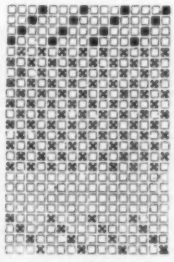
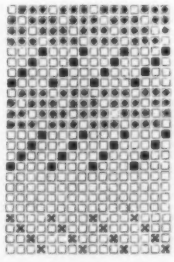


FIG. 1610



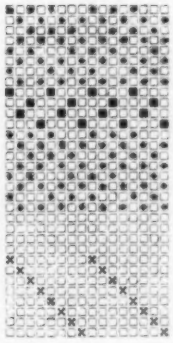


FIG. 1611

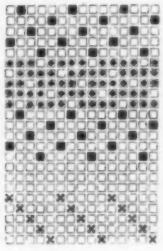


FIG. 1612

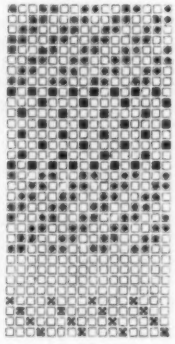


FIG. 1613

repeat the pattern several times before a repeat is obtained. A case of this kind is shown at Fig. 1617, in which a 2 up 2 down twill ground is combined with a panama weave, and the pattern repeated four times before a repeat is reached.

Fig. 1618 is a panama ground with rib plaiding. The plaiding is made with a material or color different from that of the ground.

Fig. 1624 shows a 2 up 2 down twill ground checked with 2 up 2 down basket stripes. The square formed at the intersection of the warp and filling stripes is woven in various ways. Thus in Fig. 1624 it is woven with the 2 up 2 down basket. When the weave of the warp stripe is different from that of the filling, the space at the intersection may be filled by a continuation of the warp stripe as in Fig. 1620; by the continuation of the filling stripe as in Fig. 1621; or with a weave different from either stripe as in Fig. 1619, in which the ground weave is used. The last named method is usually adopted when the stripe weave tends to make the cloth thicker than the ground.

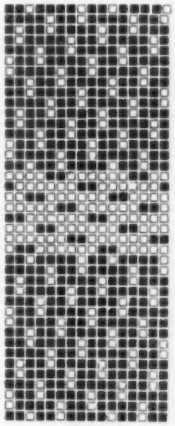


FIG. 1614

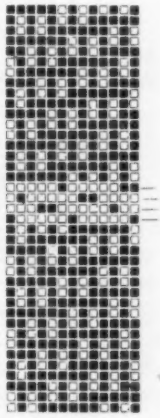


FIG. 1615

In combining a panama made of complete basket patterns with a 2 up 2 down twill

weave the break is obtained more easily when the twill ground contains one thread less than an even number of twill; for example, 7, 11, 15, 19 or 23 ground threads, the last named number being shown at Fig. 1624.

With a 6-leaf 3 up 3 down twill combed with a 6-leaf panama stripe 2 threads should be omitted from the last twill, the threads in the twill portion numbering 10, 16, 22, 28, etc. With an 8-leaf 4 up 4 down twill, 3 threads should be dropped, the number of twill threads being 13, 21, 29, 37, etc. These rules are illustrated at Figs. 1622 and 1623.

In Fig. 1619 the ground is a plain weave, the checking a 4 up 4 down rib, while the intersection of the rib lines is woven plain.

Fig. 1625 shows a plain weave checked with 6-leaf satin stripe. To facilitate the breaking of the two weaves the 6-leaf satin is drafted 1, 3, 5, 2, 4, 6.

Fig. 1627 shows a panama ground and 4-leaf broken twill checking. Fig. 1628 is made with an 8-leaf crepe ground and a 4-leaf twill plaiding, while Fig. 1626 is made with a 6-leaf crepe ground checked with a 6-leaf twill.

FIG. 1616

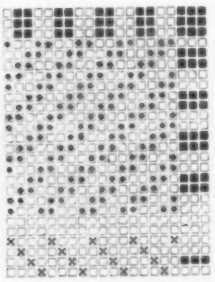


FIG. 1617

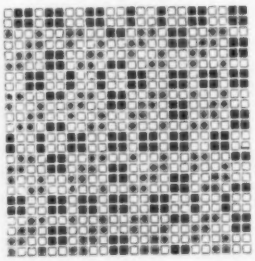
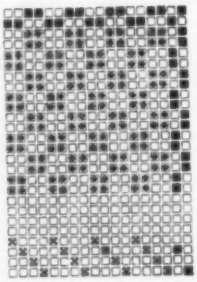


FIG. 1618



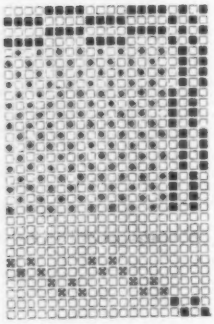


FIG. 1619

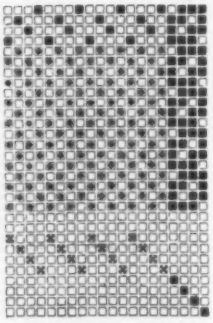


FIG. 1620

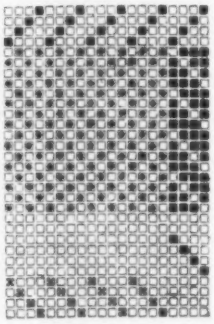


FIG. 1621

Figs. 1629 to 1631 are designated for heavier goods. Fig. 1629 has a double plain ground and rib overcheck. When, as in this

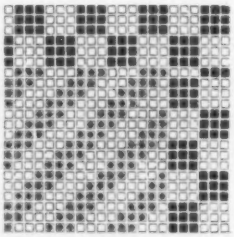


FIG. 1622

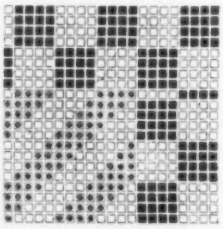


FIG. 1623

weave, the longitudinal stripe is a filling rib the cross stripe is made with a warp rib.

In Fig. 1630 the ground is a tricot long, the check a 4 up 4 down rib. At the intersection of the stripes the warp rib is continued, but changed to 3 up 3 down to match the width of the cross stripe.

In Fig. 1631 the ground is a broken 4-leaf twill with back filling. The overchecking is a 4-leaf twill with a stuffing warp thread in the cross stripe and a stuffing pick in the longitudinal stripe.

Fig. 1632 shows a pattern in which a 4 up 2 down twill alternates with a 2 up 4 down twill in the ground, the stripe being formed by a rib weave, which is separated from the ground by a plain thread or pick on either side. At Fig. 1633 the overchecking is formed by alternate stripes of warp and filling satin weaves, the square at the intersection of these stripes being a checkerboard pattern.

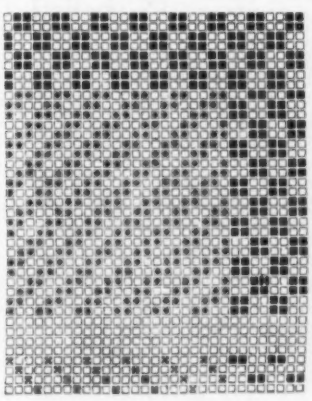


FIG. 1624

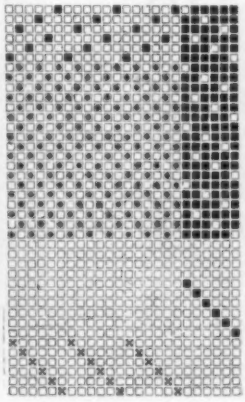


FIG. 1625

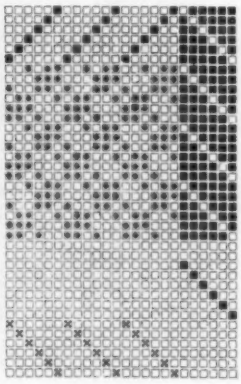


FIG. 1626

4. Checkerboard Weaves

Combination weaves for checkerboard patterns are as interesting as the three preceding varieties. The breaking of the weaves with each other is an essential feature. This is easily effected in twills and satins by running the twill of the warp and filling weaves in opposite directions.

In making checkerboard effects with satin weaves the first pick of a square should not interlace with the first thread, as given in the table on page 663 of our September, 1911, issue. If it does, a break cannot be obtained. The satin stitching should begin as follows:

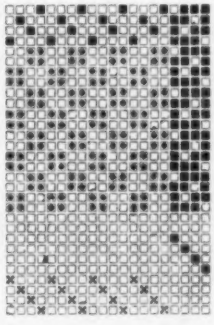


FIG. 1627

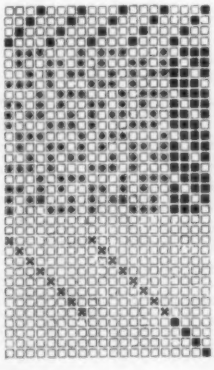


FIG. 1628

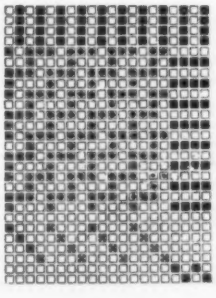


FIG. 1629

5-leaf, 4, 1, 3, 5, 2.
6-leaf, 2, 6, 4, 1, 3, 5.
8-leaf, 6, 1, 4, 7, 2, 5, 8, 3.

In Fig. 1634 there are 12 threads of a 4-leaf filling twill alternating with 12 threads of a 4-leaf warp twill.

At Fig. 1635 there are 15 threads of a 5-leaf warp satin alternating with 15 threads of a 5-leaf warp twill.

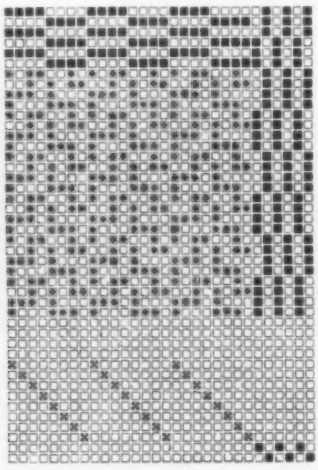


FIG. 1630

Fig. 1636 shows 16 threads of an 8-leaf warp satin alternating with 16 threads of an 8-leaf filling satin.

For bed blankets the squares are frequently made with a 4-leaf broken twill with back filling, woven 1 light 1 dark. The warp is often made of cotton yarn, the filling of carded woolen, shoddy or silk yarn. A weave for this class of goods is shown at Fig. 1637.

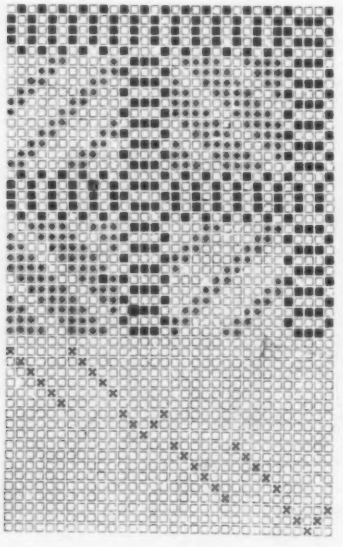


FIG 1632

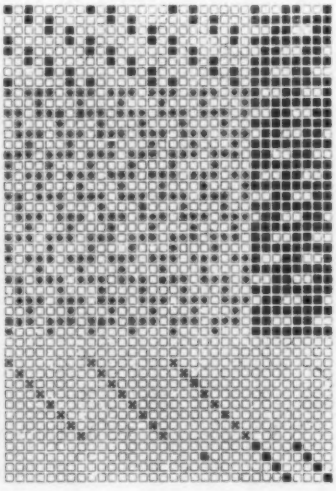


FIG. 1631

Checkerboard patterns for wearing apparel are usually made with a regular double

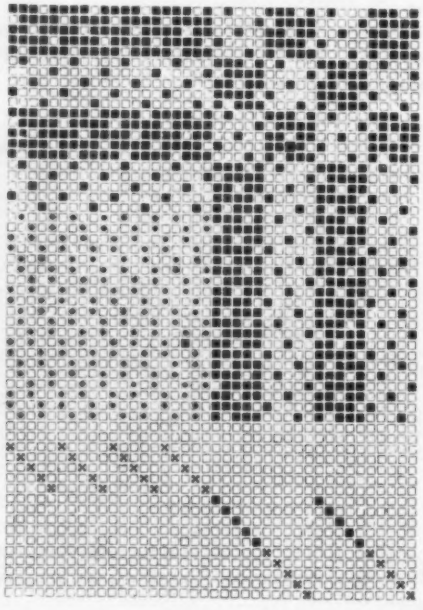


FIG. 1633

weave, 1 back 1 face in both warp and filling, the two textures alternating on back

and face to form the pattern. Four examples are shown at Figs. 1638, 1639, 1640 and 1641.

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DRAFT CALCULATIONS IN WORSTED SPINNING

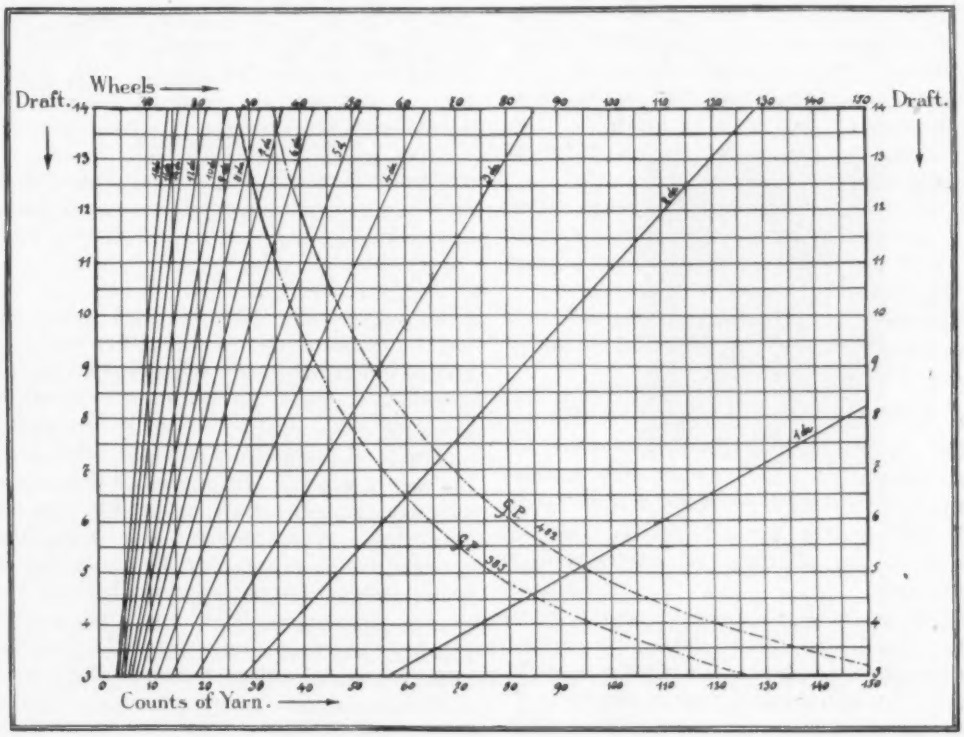
BY J. DUMVILLE

The calculation to determine the spinning draft required to spin a certain roving to a given count is complex to such an extent that most of those who have to make the calculation are satisfied to learn how to work it in the simplest and most abbreviated manner, without troubling themselves as to the reason for the short cuts they use. Preliminary to recommending a more extensive use of graphs as a quicker method of obtaining the information regarding drafts and wheels than the use of figures affords, we will show the various methods which may be employed and at the same time the basis on which all such calculations rest.

The drawing overseer confines his material calculations to drams and to tenths of drams and sends his roving product to the spinner in the terms of so many drams per 40 or 80 yards. In the reduction of this roving to yarn the spinner uses a different standard, the basis of which is that the number of the yarn indicates the number of 560 yard lengths in a pound:

560 yds. of 1s = 1 lb. or 256 dram or 7000 grains.

560 yds. of 2s = 1/2 lb. or 128 dram or 3500 grains.



40 yds. of 1s = 1/14 lb. or 18.3 dram.

1 yd. of 1s = 1/560 lb. or 12 1/2 grains.

Knowing the weight of 560 yards of roving and the required size of yarn a calculation which will convert drams per hank to counts per hank is necessary. Suppose a roving weighing 28 drams per 560 yards is to be spun to 60s. What draft will be required?

Example 1

256 (drams) ÷ 60 (hanks) = 4.26 drams per hank.

28 (drams) ÷ 4.26 (drams) = 6.5, draft.

The roving weight may be first converted into counts as follows:

Example 2

256 (drams) ÷ 28 (drams) = 9.14, number of roving.
60 (hanks) ÷ 9.14 (hanks) = 6.5, draft.

As the drawing standard of length is generally 40 yards and the weight of 40 yards of roving in drams is the basis of weight, the foregoing method may be considerably abbreviated by the use of the "gauge point" or "constant," 18.3, a value which bears the same ratio to 256 drams per pound as 40 yards bears to 560 yards to the hank, i. e., 18.3 being 1/14th of 256 drams, while 40 yards is 1/14th of 560 yards.

It will thus be seen that this gauge point, 18.3, represents the weight in drams of 40 yards of No. 1 yarn, the count of 1 dram roving being No. 18.3.

Example. If 40 yards of roving weighs 2 drams what draft will be required to spin it to 60s counts?

(60s × 2) ÷ 18.3 = 6.5, draft required.

The slide rule is a useful time-saver for such calculation and requires only an elementary knowledge of how multiplication and division are worked on the rule by means of the addition and subtraction of logarithms.

After the draft required to spin a given count has been ascertained the proper change wheel to place on the frame must be found. An initial calculation is necessary to obtain a suitable gauge point, which shall represent the unit value of the change wheel. This is done by dividing the product of all increases by the product of all the decreases involved in the calculation. The quotient thus found represents the relative speed of the back and front rollers with the change wheel at unit value. When this gauge point has been obtained the constant factors in the calculation may be ignored.

Example. The dimensions in a spinning frame draft train of wheels are:

Diameter of front roller, 4 inches.
Change wheel, 1.
Double shed wheels, 100/83 teeth.
Back roller wheel, 100 teeth.
Diameter of back roller, 1 1/4 inches.

Increase (4 × 100 × 100) ÷ Decrease (1 × 80 × 1 1/4) = 385, gauge point.
Gauge point ÷ draft = gear.
Gauge point ÷ gear = draft.
385 ÷ 6.5 = 61 gear.
385 ÷ 61 = 6.5, draft required.

The machine gauge point (385) and the yarn gauge point (18.3) can be combined by multiplication. This product serves as a new gauge point from which the wheel required can be obtained direct. Thus, 385 × 18.3 = 7045, and the product of counts required and dram weight of roving into this number equals the draft wheel required.

Example. To spin 60s count from 2 dram roving with the same dimensions as previously referred to, the formula is:

7045 ÷ (2 × 60) = 61, gear.

Having explained the method of converting drams per pound to counts per 560 yards and assuming the principles underlying the calculations given to be fully understood, attention may now be drawn to the saving in time and labor which may be effected by the use of graphs. By means of the accompanying graph the draft required to spin any count from 4s to 160s from any roving from 1 dram to 16 drams per 40 yards can be found directly without any calculation. This graph is composed of two independent graphs. The first one, composed of straight lines, is constructed according to the already derived relation between counts, roving weight and draft.

Thus: Draft = (count × drams of roving) ÷ 18.3.

The second one, composed of two curves, is constructed according to the relation of the draft gauge point of a frame, its draft, and the number of teeth of the change wheel.

The only way in which to deal on a plane surface with the three variables is to construct several graphs for a limited number of values that one of the variables can take, in this case the roving weight, and in each of which the values of the other two vari-

ables, draft and count, can be unlimited. Such are found according to the equations:

Counts $\times$ 1/18.3 = draft.
Counts $\times$ 2/18.3 = draft.

The straight lines marked 1 dram, 2 dram, etc., are shown on the graph.

The second series, of course, is constructed according to the equation:

Draft wheel = draft gauge point $\div$ draft.

All curves of this type ($xy = a$) may easily be constructed to suit cases where the train of wheels employed produces a different gauge point by plotting out a few points and using the equation.

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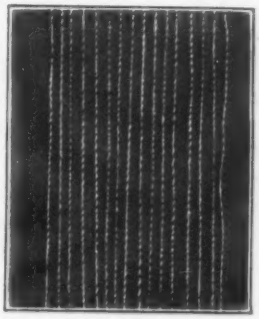
HORSEHAIR YARN

There has recently been invented in Germany a process of manufacturing a continuous thread from horsehair. The following description of the process is taken from a circular issued by the German firm that has been organized for the manufacture of the yarn:

The manufacture of horsehair goods has increased rapidly during the past ten years. Formerly its use was confined to cloth used in the manufacture of clothing, but now horsehair is employed in place of textile materials from which it differs radically. Horsehair is used for the manufacture of hair sieves, hair belting, as well as stiffening materials for clothing. Hair fabrics are also used for upholstery and similar purposes. A pronounced advance in the production of hair cloth occurred when it became possible to produce a continuous thread from horsehair.

The difficulty of weaving short lengths of hair is well known and resulted in many defects in the goods as well as a very high cost of production. A few years ago a German firm placed on the market what is known as horsehair twist cloth, and it immediately found a large sale. All the horsehair twist goods previously made have been not only very expensive, but also open to the objection that the ends of the hair would project from the goods. This objection was especially serious in the manufacture of clothing, as the ends would work their way through the outer fabric. Recently a German inventor has succeeded in perfecting a process by which these difficulties can be overcome in the manufacture of endless horsehair yarn. The process has been patented in all the principal countries.

The hair is glued to a cotton binding thread by means of an ingenious machine. The cotton and hair thread is then twisted on another machine. A special mixture, of which the composition is secret, is used for gluing the hair to the cotton thread. This mixture is insoluble in chemical solutions and the yarn can be boiled without danger of separating the hair and the cotton. Neither is it possible for the ends of the hair



A SAMPLE OF HORSEHAIR YARN

to become loose and project from the yarn. The problem of manufacturing hair cloth from which the ends of the hair will not project is, consequently, solved and the new fabric will be extensively used in many branches of the textile industry. The new hair yarn is soft, flexible and elastic. It can be manufactured in large quantities and is free from fine and coarse places. The new yarn costs less than other hair yarn, as there is very little labor required for its manufacture and it is possible to use short hair, which is much cheaper than the long hair. We learn that the American agent for the horsehair is Edward Elsner, 184 Summer St., Boston, Mass.

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The oldest examples of figured cloths, dating from about 3000 B. C., are tapestries ornamented with colored threads let into the weave.

THE MANUFACTURE OF CHIFFON TAFFETA

BY LITHONIA

In order to make chiffon taffeta successfully one must get a good grade of raw silk, free from hard gums. The following are grades which can be used to best advantage: Italian Grand Extra Classical Piedmont 12/14 den.; Extra Classical Italian 12/14 den. or 12/16 den.; Classical Italian 13/15 den.; Best No. 1 Italian 13/15 den.; Japan filature Kansai Extra Extra 13/15 den.; Japan filature Kansai Extra 13/15 den.

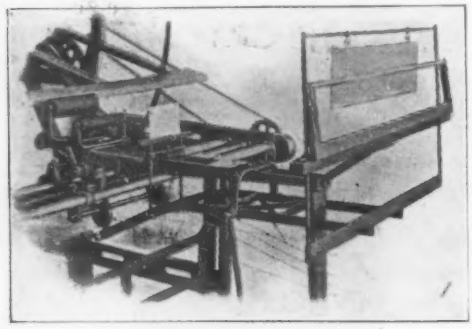

FIG. 1

The silk is thrown into regular organ 16/14 turns, 10,000 yard skeins, and dyed from 14/16 ounces to 18/20 ounces with a bright extra brilliant chiffon finish, and boiled off before dyeing by the new soap foam degumming process, which keeps the fibers intact.

Perfectly smooth 3 3/4 inch bobbins with 1 1/2 inch heads should be used, although 3 3/4 inch bobbins with a 2 inch head can be used, if the winder is careful not to wind too hard and have them as near the same size as possible. If these requirements are not fulfilled the cloth will look streaky. See that the guides on the winder are smooth and clean, that the traverse is correct, that the silk does not lap down on the inside of the bobbin head, that the winding frames run free and that the operator cuts off all knots so the tails are not over 3/32 inches long, otherwise they will cause small floats in the goods.

In making warps care must be taken to have no chafing of ends. To prevent this the glass rods and glass reeds on the bobbin creel must be perfectly smooth and clean and not cut in. The cross reed and front reed must also be smooth and free from rust and must not be cut in any way. Cutting in can be avoided by an oscillating reed motion, shown at Fig. 1.

Warps should be run through glass cross rods through the entire warp and a lease cord put in every cut at the start and end of the warp. This is to prevent sticking in rods while weaving. The sections should be set so that there is not too much space between each and no overlapping sections, otherwise streaks will show in the goods. The sections should also be made on a horizontal warping machine and the elevation must be set accurately. On the Swiss low warping frames the warp should be run through iron rods and elevation. On both frames the warps should be made with medium speed.

In beaming off warps, papers should be put on every three or four yards, and well weighted while beaming. If this cannot be done the warps should be rebeamed. The warps should also be picked extra clean, taking out all half ends, caterpillars and lumps. Tails on knots should be cut off short to about 3/32 inch, otherwise they will cause small floats in weaving. A good idea is to repick them in a frame specially constructed for this purpose, after being warped and beamed, removing all irregularities.

The following are a number of good counts for chiffon taffeta made with any of the above mentioned grades of silk and dyed from 14/16 ounce to 18/20 ounce bright extra brilliant chiffon finish:

70/4/1, 67/4/1, 60/4/1, 75/3/1, 70/3/1, 67/3/1, 65/3/1, 60/3/1, 70/2/2, 65/2/2, 60/2/2. Fill with either Japan filature Kansai Extra Extra 13/15 den., Kansai Extra 13/15 den., Shinshu Extra 13/15 den., and Kansai Best No. 1 13/15 den. Thron into 3 thread, 4 thread and 2/2 thread, from 2 1/2 to 3 1/2 turns per inch. Make skeins no longer than 5,000 yards and dye from 16/18 ounce to 20/22 ounce, with a bright extra brilliant chiffon finish. The picks range from 104 to 116 per inch. The tram

should be boiled off by the new soap foam degumming process before dyeing.

French harness made of good twine, say 120/9 cord glazed cotton should be used. These harness are best for all colors, light as well as dark. Warp should be drawn skip shaft on 4, 6 or 8 shafts as shown at Fig. 2. They should have a back reed or clearer

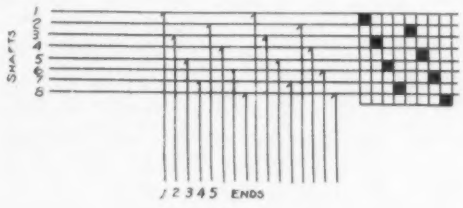

FIG. 2

made of twine, to prevent floats. The reeds should be carefully looked after. The best reeds are made as follows: 75 dents with 85 wire, 70 dents with 80 wire, 65 dents with 75 wire. See that the reed is smooth, free from rust and not cut in, otherwise it will cause chafing of the ends.

The warp is now ready for the loom, which

haired squirrel or minkskin fur is best. Bow shuttles should be used wherever possible, although shuttles with glass tensions will do. Have the weaver use one shuttle only, not two to change quills. The tension of the shuttle should be set medium. The loom should be set in such a way that when the harness is level the loom is closed, and the fell of the cloth is at the reed, as shown in Fig. 3.

The loom should be run with a negative take-up motion, to take up any irregularities in filling, otherwise the goods will look shivey. The shed should be no higher than is necessary to let the shuttle pass through freely and the warp should be clear of the race plate. The speed of the loom should not be more than 120 picks per minute to get good results and the shuttle must not rebound. A good edge will be obtained if the last end in the warp is double and the end next to it is single, both to be put in the last dent on each side of the goods. The harness should have bridles or side cords to prevent them from wearing out prematurely

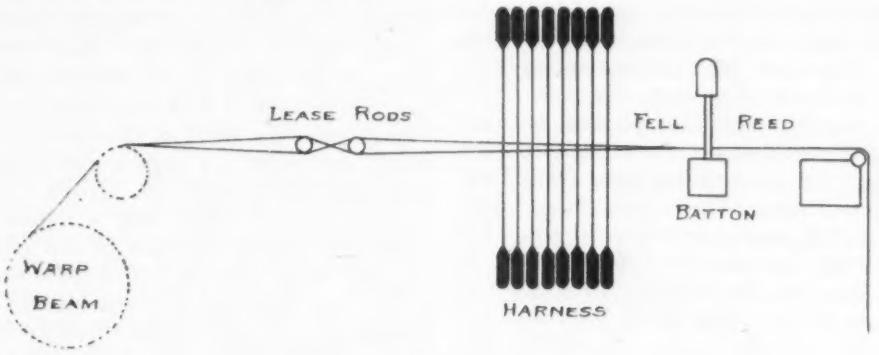

FIG. 3

should be in good condition and run by a careful weaver. The race should be perfectly smooth and clean for light colors. The shuttle boxes should be washed out with benzine or naphtha to prevent box marks. The loom should be perfectly level with no play in batten arms.

The shuttles should be in first class condition and be lined properly with fur in such a way that it does not hinder the filling from unwinding smoothly. Have plenty of room between the quill and shuttle sides. Long

and should also be moved regularly. If the cloth shows white chalky marks, called friction marks, a little castile soap rubbed on the last 2 shafts nearest the warp will overcome the defect. The reed should also be loose so that it can move from side to side and up and down.

Care should be taken to make the quills right. They should be hard enough so as not to slip off the quill. The knots should be turned back and the smallest quills used, say 3 1/2 to 4 inch quills. See that the

traverse corresponds with the traverse pitch of the quills. The traverse should be no wider than 3/4 inch. Each straight or cross traverse can be used for light colors. Care should be taken to have the machine perfectly clean, also running smoothly and with no friction. The quills should not be cut in any way and the traverse should work freely. The tension of every quill should be looked after continuously. The quills should not be too fat or too full and should all be as uniform as possible.

The warps should be weighted medium and the shuttle set in time. The weaver must cut out the ends which hang together behind the reed, otherwise they will cause hangers or butterflies. The ends should be put in as soon as they break out. Care should be taken that ends are put in the reed right. Tight and loose set marks should be avoided. In order to avoid wrinkles on the roller spreader paper should be put in and the weaver must help to keep it in position. If the loom stands a day or two the tension must be left on the warp and the harness leveled before closing time, otherwise marks will be made in the goods when starting again. The cloth will also become wrinkled.

The woven cloth goes to the picker who should use great care in picking out any loops or lumps that may have come in while weaving. The cloth should be perfectly tight and smooth during this operation and kept smooth. The goods are then rubbed and finished to the proper soft chiffon handle. It will be seen that the utmost care is taken in every operation. If the above directions are thoroughly complied with, one will be able to manufacture chiffon taffeta without cockles or imperfections.

Cotton awnings were introduced by Lentulus Spinther at the Apollonaris games, held on July 6th.

Statistics show that in 1903 over 60 per cent. of the women employed in the spinning mills of Italy were earning between 20 and 30 cents per day; 25 per cent. were earning up to 20 cents, and only 14 per cent. between 30 and 40 cents, while less than 1 per cent. were getting over 40 cents.

THE MANUFACTURE OF HABUTAE

BY JAMES CHITTICK

The special characteristics of good qualities of Japanese habutae are a peculiar softness, coupled with great brilliancy, and a texture light but sufficiently close, the fabric being usually made in a plain weave. The name itself, it is said, signifies "soft as down." The luster and suppleness are, in great part, due to the fact that none of the material used for the warp or filling has any twist in it. The cocoons are reeled in native fashion, and the raw-silk threads produced are wound upon the small native four-armed reels, from which, if the silk were for export, it would have to be re-reeled into skeins of standard size.

Above the row of reels, and about waist high, is a horizontal board, a few inches wide, and on this board are set a row of round tin cans, each tin being directly over each pair of reels. A very small hole passes down from the center of each can and through the board. The threads from each of the two reels of silk in a pair are now brought together, passed through guide eyes placed above them, are then threaded through the holes in the boards and cans, and carried up to a roller revolving at a level higher than the head of the operator, over which they pass to a large wheel behind the operator, and on which the heads are wound.

The cans are filled with a native glue, somewhat of the character of fish glue but not very fluid. As the threads pass through it they are thoroughly glued together, any surplus glue being scraped off as the thread emerges from the can. To prevent their sticking together on the reel a strong current of air is blown against the threads by pans placed between the reel and the board, and which are made to revolve in the opposite direction to the reel. By this means the threads are sufficiently dried, and, after the usual length has been reeled off, it is unwound and another length is started. In this way enough material is accumulated for the warp. Short warps are customarily made. The filling is usually composed of a combination of two, three, or four raw silk ends, usually the latter. The preparation is made

in the same way as for the warp, but after the threads emerge from the glue, they are wound on small iron quills, or shuttle bobbins, about two or three inches long, and after the winding they are dropped in basins of water to keep them from hardening.

The goods are woven on very simple hand looms and as the filling is woven in wet and gummy it can be closely beaten into the cloth by the weaver. As the cloth is wet something similar to temples is required to hold it out in width. For this purpose a number of bamboo sticks are provided, at both ends of which project sharp pins at right angles. These pins are shoved through the cloth as it is woven, just inside the selvage so as to keep it out to its proper width. If a piece of habutae is examined these characteristic pin holes along the edges will be found.

The glue used being of an elastic character, the goods when woven do not feel unduly stiff and boardy. This glue as well as the natural gum of the silk is afterwards boiled out of them and the finished goods come soft and pliable. This gluing process has doubtless been evolved from the necessities of the case.

As this industry has been principally a household one, the goods produced will vary much in width, length, weight and quality and the buyers, who make their purchases at the habutae markets in the interior, have to select the goods piece by piece and grade them into suitable lots at Yokohama. Even then, there is no exact regularity possible, so purchasers of such goods in this country must understand that variations are to be looked for.

A friend of mine once accompanied a buyer to one of the Japanese habutae markets, and was with him while he was engaged in looking through stocks of cloths, selecting a piece here and rejecting one there till he had selected many hundreds of pieces. While observing the buyer, my friend noticed him making some peculiar movements, and subsequently questioned him about them. He then showed him a small elastic band that passed around the end of his thumb, to the inside of which was attached a tiny rubber stamp of his initial. To the inside of the flap of his coat was attached a small inking pad, and the motions were the pressing of the stamp against the pad, and the imprinting of the initial in turn upon the corners of the pieces selected. The buyer explained that, when the goods arrived at Yokohama at least a third of the pieces would be inferior to those he had selected, and he wished to have evidence as to what he had actually bought to enable him to reject the inferior pieces.

Habutae is usually shipped abroad in the boiled-off, but undyed, state. Widths may vary from as narrow as 12 inches for handkerchiefs to 44 inches. Adulterating or loading the goods by the use of substances that will increase their weight is a practice by no means rare in Japan. The Government has been compelled to make stringent regulations to check this evil. A few years ago regulations were also made authorizing the official stamping of all goods that, on inspection, were up to standard, the inferior pieces being left without this certification. It was found, however, that these inferior pieces would be brought up again and again for inspection, and, sooner or later, they would get certified. A year or more ago a further step was taken, compelling the stamping of all goods on inspection. Several stamps are employed to indicate different qualities. As poor goods now have their inferior character proclaimed by the stamp on them, they must be sold for what they are worth. There are severe penalties for removing the stamps. "Kaiki" is another Japanese native cloth with a twilled weave.

The Japanese production of silk woven goods is considerable, the output for 1911 (which was somewhat smaller than for 1910) being valued at $53,706,732. This includes crepes, habutae, kikai, and others, the habutae being $20,631,175. The ouput of sashes was $2,128,477, of silk and cotton mixed goods, $15,012,557.

The value of the habutae exported to the United States in 1912 was $1,612,052, being only one-third of the shipments of 1906, since which time there has been a steady decline.

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If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

CAPACITY OF A CARD

Editor Textile World Record:

The finisher card of a 48-inch machine is running on stock of a mixture of about 65 per cent. wool and 35 per cent. cotton. The doffers, which are 12 inches, take off 30 ends each (top and bottom). The top doffer runs, as shown by indicator, 18 revolutions per minute, while the bottom runs but 16 turns. The roving weighs 85 grains for 30 ends one yard long. Will you please state capacity of card in pounds per hours and also advise if humidity will increase the weight of the roving when converted in yarn on the mule? Why does the bottom doffer run slower than the top and at the same time take off as much roving, if such is a fact? Carder (2354).

The card having doffers 12 inches diameter taking off 30 ends each, running 18 revolutions per minute, should have the following production standards:

Yards per minute	1 end	=	18.7
Yards per hour	1 end	=	1130
Yards per hour	30 ends	=	33900
Yards per hour	60 ends	=	67800

Roving at 85 grains per 30 yards is equal to 2470 yards per pound.

Production per hour of the card 27 1/2 pounds per hour. This is theoretical production, from which an allowance for the different delays, such as changing spools, strippings and occasional breakdown should be deducted. A standard allowance is 10 per cent.; therefore, the card should produce at 100 per cent. efficiency, 24 1/2 pounds per hour. This is equal to about 6 spools per hour.

Humidity in the air will surely affect wool, which is very hydroscopic, but it is more likely that the weight will lose during the spinning process instead of gaining. The emulsion which is added to the wool before it reaches the picker often increases the weight from 10 to 15 per cent. This is evaporated during the carding and also during the spinning process. Under normal conditions, the yarn as it is coming from the mule contains the normal humidity, but in rainy seasons, especially in the fall and in the spring, it might increase 3 to 5 per cent. This also depends upon the location and the regulation of humidity of the mill.

It is technically possible that two doffers running slightly different should take off the same length of roving. In this case the lower doffers' delivery should be somewhat heavier than the uppers. It should be remembered that the roving might be stretched from the doffer to the delivery roll.

Check back on the finisher whether the diameter of the pulleys of the upper and lower doffer are the same. If there is a difference this explains the different speeds. It is also possible that on the lower pulley for certain reason the slippage is caused. I advise to test separately the upper roving and the lower roving, and should there be a difference in weight this will explain the variation. Eugene Szepesi.

DEFECT IN ELASTIC FABRIC

Editor Textile World Record:

Enclosed is a sample of elastic webbing showing dark and light streaks which can be readily seen by holding the sample up to the light. Please inform us what the cause of this shading is, whether it is due to the silk, the dyeing or the weaving. The silk used in the fabric is 150 denier, artificial silk. Saxon (2349).

Our French correspondent to whom we referred this question replies as follows:

The streaks filling ways in this sample are undoubtedly due to thick and thin places caused by uneven weaving. If the sample is placed on a flat surface between the observer and the light and the edge of a rule placed on the sample, the thick and thin places

show up very plainly. This irregularity is caused by the improper working of the take-up and let-off motion of the loom. Gaul.

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May 13, 1914.

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There are several machines on the market for dyeing of ramie sliver. In some of these the sliver is entered and dyed in the form of tops; in others it is wound on perforated tubes or pipes. All machines have one property in common, in that the dye liquor is forced through the sliver and kept circulating by a double acting pump or similar contrivance.

The sliver is entered in a dry condition and is dyed like mercerized cotton, but wherever possible olive oil and glycerine are added to the dye-bath to increase the softness and luster of the fiber. When acid colors are used the sliver must be washed thoroughly and the oil and glycerine added to the finishing solution.

After dyeing, the tops or baskets holding the sliver are hydro-extracted, and the fiber is then dried very slowly. Slow drying is essential, as quick drying will make the fiber harsh and brittle.

After drying the sliver is passed through a gill-box, recombed and finally put through a gill-drawing frame. The loss in recombing is small and this operation may be omitted except in the case of exceptionally fine work. When a uniform and especially lustrous sliver is required, recombing is beneficial. The sliver is then packed in cylindrical paper boxes of about ten pounds and is ready for shipment. For dyeing light shades bleached sliver should always be used.

We furnish bleached and unbleached ramie sliver to the millinery trade, but do no dyeing at our mills.

Very truly yours,
Superior Thread & Yarn Co.
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NUMBER OF NEEDLES TO THE INCH

Editor Textile World Record:

Please state what is the greatest number of latch needles to the inch. Avon (2356).

There are frames cut 16 to the inch. I have a few of them, but they have not been satisfactory. Fourteen latch needles to the inch is the greatest number I have known to work well. Trenton.

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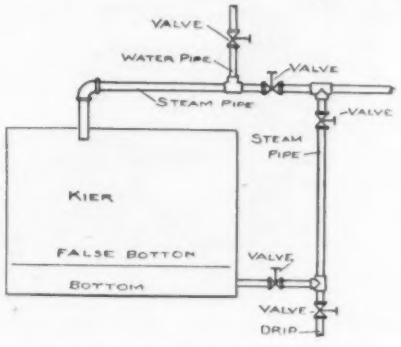
I have read with interest "Delco's" reply to "Maxwell" (241), and would like to offer a little more information. It is often very difficult to wet out the goods before putting them into the kier. I overcome this trouble as follows: Instead of running in cold water after the goods are in the kier I arrange to run in hot water. I had a steam pipe connected up to the water pipe, as shown in the illustration. By putting on steam along with the water I had hot water for a start and hot water will wet out the goods much



APPARATUS FOR BLEACHING KNIT GOODS

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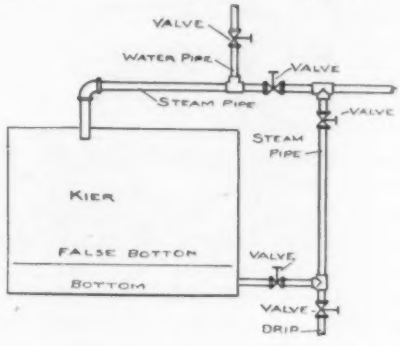

APPARATUS FOR BLEACHING KNIT GOODS

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hours before the time was up. This loosened up the goods in fine shape. It also gave a better chance to wash off the goods. The goods must be boiled light to get a good bleach. Hector.

TESTING YARNS

Editor Textile World Record:

Please give us some information in regard to the testing of yarns for strength by weavers or textile manufacturers. What is meant by "yarns must test 20 to 30 pounds"? Lachine (2366).

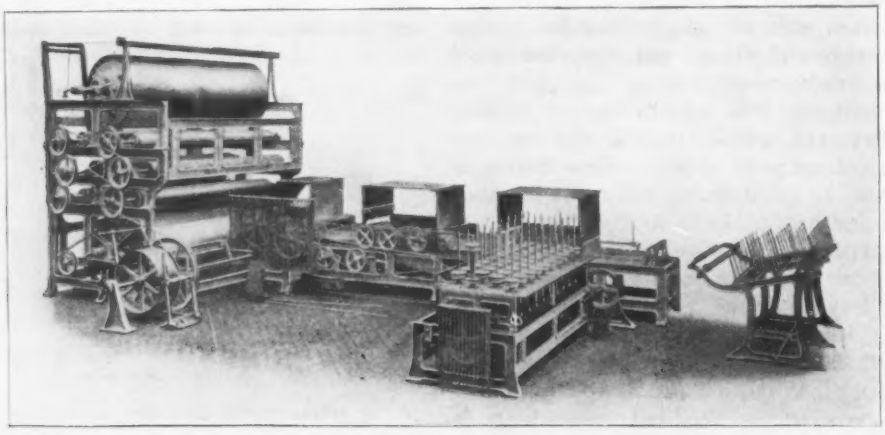
The ordinary method of testing the strength of yarn is to reel the yarn into a skein 1 1/2 yards long containing 80 ends. In breaking this skein the strain comes on 160 ends. This is probably the method to which "Lachine" refers.

POLISHING TWINE

Editor Textile World Record:

No. 1 is a sample of twine with a hard finish and No. 2 is soft. How can the latter be finished to resemble the former? Columbia (2358).

The harder sample has evidently been polished upon a machine in passing from bobbin to bobbin. In the Fairbairn MacPherson machine, built in England and shown in the illustration, the twine is led from a creel through a steam-jacketed water-trough and between squeezing rollers, then over a rubbing roller and into one or two starch-troughs. The twine then passes through squeezing rolls and onto two 9-foot drying cylinders of 40 and 36-inch diameter. From thence it runs over polishing rollers and on to winding-on spindles. The price of a machine with 24 spindles, two drying cylinders, twelve rubbing rollers, three troughs and the necessary pipes and cocks is about $1,500. J. Strand.



THE FAIRBAIRN-MACPHERSON MACHINE FOR POLISHING TWINE

TEXTILE SCHOOLS IN ENGLAND

Editor Textile World Record:

I would like a list of the best known textile schools in Great Britain. Chester (2359).

Our English correspondent replies as follows:

It would be a task of great difficulty to give a complete list of all the British schools and classes in which technical instruction in textile manufacture is given. From the best available sources a list which is not exhaustive has been compiled and is appended. With the addition of a few remarks it will perhaps serve the purpose required.

As might be expected, the chief textile schools are to be found in the chief textile centers and these stand in the position of upper schools or colleges towards the smaller technical schools and classes of the city or district. The chief schools are well equipped with machinery, whereas the others have less or have none. Manchester, Glasgow, Belfast, Bradford and Leeds have the largest and best known institutions and the full names of their schools will be found in the list. Where there is so little uniformity it is difficult to lay down rules of general ap-

plication, but the schools named are not the only collegiate ones or the only ones turning out useful men. The schools of each district take their color from the industries of the district. Thus in those Lancashire towns in which cotton spinning is the dominant industry, the school is equipped to teach spinning rather more than weaving. The worsted processes engage first attention at Bradford and the woolen processes at Leeds. Hosiery manufacture is taught in the hosiery centers, notably at Leicester and Hawick. Carpet manufacture is taught at Halifax and Kidderminster, for example. At Nottingham and Maeclesfield much attention is given to the artistic side of designing, because the lace and silk trades depend heavily upon design.

Technical designing is taught in all the schools, but more efficiently in some than in others. Belfast teaches the linen trade and Galashiels the tweed trade. Each school has its particular bent, but the general aim is to give sound instruction, useful in understanding textile problems at large, in the immediate form dictated by the work in the local mills and the ideas of the examiners. It is probably true to say that nine-tenths of the workpeople in the industry have textile classes within easy distance of their homes. The larger schools, including those which are branches of the new universities are under municipal direction. The smaller schools in the out-districts are controlled by the education committees of the county councils. It will be seen that a few of the schools bear the names of their founders.

In the list the order is alphabetical:

Ashton-under-Lyne, Heginbottom Technical School.
Batley, Technical and Art School.
Belfast, Municipal Technical Institute.
Bingley, Technical School.
Blackburn, Municipal Technical School.
Bolton, Municipal Technical School.
Bradford, City Technical College.
Brighous, Technical School.
Burnley, Municipal Technical Institute.
Bury, Municipal Technical School.
Chorley, Municipal Technical Institute.
Darwen, Municipal Technical School.
Derby, Technical College.
Dunbermbine, Technical School.
Duosbury, Technical School.
Galachiers, South of Scotland Technical College.
Glasgow (University), Royal Technical College.
Halifax, Municipal Technical College.
Harwick, Technical School.
Huddersfield, Technical College.
Keighley, Technical Institute.
Kidderminster, Technical School.
Lancaster, Storey Institute.
Leeds (University).
Leicester, Municipal Technical School.
Macclosfield, Technical School.
Manchester (University), Municipal School of Technology.
Nottingham, University College.
Oldham, Municipal Technical School.
Paisley, Technical College.
Preston, Harris Institute.
Pudsey, Technical School.
Rochdale, Municipal Technical School.
Salford, Royal Technical School.
Shipley, Textile College.
Stockport, Municipal Technical School.
Stroud, Technical College.
Trowbridge.
Wigan, Mining and Technical College.

J. Strand.

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DYEING HOSIERY

Editor Textile World Record:

I am encolsing a sample piece of hosiery. The white part is mercerized cotton, the brown part is plated with French artificial silk, and desire to know if it is possible to make a uniform shade of any color on hosiery of this kind. I have tried several methods, but get a heavier shade on the silk part. Dyer (2353).

Regarding the dyeing of hosiery containing mercerized cotton and artificial silk, would say that I do not think it possible to obtain a uniform shade by dyeing this material in the woven piece owing to the fact that artificial silk has a much stronger affinity than cotton for almost all coloring matters. Although artificial silk is a cellulose material, both its physical and chemical properties are considerably different from either ordinary or mercerized cotton. Artificial silk may be considered as a hydrated cellulose with respect to its chemical nature and this appears to take up dyestuffs much more readily than cotton.

In its physical structure artificial silk is also much different from cotton as it consists of a very homogeneous and rather structureless continuous filament of a colloidal nature that is very readily penetrated by solutions and in consequence of which it absorbs coloring matters with great avidity. The cell of the cotton fiber on the other

hand is more resistant to the inner penetration of solutions and consequently will not take up coloring matters from the dye bath with the same degree of readiness as artificial silk. So marked is the ability of artificial silk to absorb dyestuffs that this fiber can be rather easily dyed even in comparatively cold solutions with almost all classes of coloring matters, including the acid and basic dyestuffs, whereas it is well known that cotton has a very slight attraction for these dyestuffs and cannot be satisfactorily colored thereby except through the intervention of the mordant which has first to be applied to the fiber before a true dyeing operation can take place. Apparently the only way to obtain an even color on hosiery made on a mixture of cotton and artificial silk, is to dye the two separately to a uniform shade in the yarn before the fabric is knitted. This, of course, implies an increase in cost over the process of dyeing in the piece after the knitting has been done, but it is the only way in which a uniform shade of color can be obtained.

With respect to the manner of bleaching this character of fabric, there are two methods open for consideration. First, bleaching with hypochlorites, in which case the bleaching is carried out in much the same manner as that of ordinary cotton bleaching, using either a solution of bleaching powder or one of sodium hypochlorite. In either case, however, it is desirable that the bleaching solution should be as neutral as possible as the presence of alkali therein either in the form of caustic soda, soda ash or calcium hydroxide would be liable to cause the artificial silk to come up with a yellowish shade which would be in contrast with the whiter cotton part. However, we believe it possible that this method of bleaching could be employed so as to obtain a rather uniform degree of white on both the cotton and the artificial silk, although great precautions have to be used in carrying out the operation. It would not be possible, for instance, to kier-boil this material with strong alkaline solutions as would be practiced with all cotton goods, as such a treatment would result in the deterioration of the artificial silk, causing it to become soft and pulpy and lose considerably in its strength and in its luster and in addition thereto the artificial silk would require a yellowish color. Therefore the ordinary boiling-out operation would have to be omitted and there should be substituted in its place as simple a wetting out process as possible, which would have for its purpose a wetting out of the fiber so that it becomes capable of absorbing properly the bleaching liquor. This wetting out operation would be conducted by steeping the material in hot water for several hours and preferably using a smaller quantity of malt extract in the water which would cause the removal more rapidly of the water repellent materials existing on the cotton fiber. As, however, the cotton material in the hosiery sample submitted is of mercerized cotton, this really has already been treated in a mercerizing operation to practically a boiling-out operation and even to a strong treatment with caustic soda solution so that it would probably have very little waxy or resinous matters left in the fiber and it should wet out rather easily even in hot water.

In the second place the bleaching may be conducted by the peroxide method, using a solution of hydrogen peroxide of about one-half per cent. strength with sufficient ammonia to render the bleaching bath slightly alkaline in character. This bleaching process is conducted in the ordinary manner with peroxide bleach though care must be had not to employ a bleaching bath which is too alkaline in character, as otherwise the artificial silk is liable to acquire a yellowish tinge. It is necessary to leave the material in the peroxide bleaching bath for 8 to 10 hours at a temperature of about 100° F. It is not recommended to use a much higher temperature than this in connection with the bleaching of the artificial silk as otherwise the luster and strength of the fiber may be seriously injured. J. M. Matthews.

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Empress See-Ling-Chi, about 2600, invented the silk reeler which has ever since been used by the Chinese in silk manufacture.

BLEACHING KNIT GOODS

Editor Textile World Record:

I would like information on the following points in connection with the bleaching of cotton knit goods:

1. Hot sour vs. cold sour, sulphuric acid. Is the hot sour advantageous? If so, advise best temperature and give reasons, together with per cent. of acid to use per one hundred pounds of goods.

2. Antichlorine, sodium bisulphite vs. sulphuric acid. Which is the best considering cost, quality of bleached goods, etc., and reason why?

3. Best method of putting chemicals into boiling kier. We are using the following method and would ask that you advise us of any improvements that could be made:

Our goods are packed in the kier dry, the soda ash and caustic soda being dissolved in a separate tank connected to the water main. Both water main and pipe line are controlled by valves and the union of these two lines going into kier. The chemicals and water are mixed in this pipe by slightly adjusting the valves and go into the kier on top of the goods. Our objection to this is that the cold water chills the chemicals containing rosin, and I think causes the rosin to crystallize to a certain extent. Is this possible if the chemicals are well dissolved? Can you suggest a better method of putting the chemicals into the kier?

4. Hydrochloric acid used right after caustic boil and before chemicking. Do you think this is advantageous? If so advise percentage of hydrochloric acid to use, temperature, length of bath, and advantages. Just how does this act on the goods? Should the goods be rinsed before going into chemic? Sandow (2260).

To overcome the difficulty complained of by this correspondent, I would direct that the goods, after being boiled in the kier for twelve hours with 28 to 30 pounds of caustic soda, be drained off and subsequently boiled with chip soap and soda ash, 20 to 25 pounds of the former and 7 to 9 pounds of the latter. Then run off and give several good rinses before running on the bleach liquor, which should stand between 1° to 2° Tw.

Hypochlorite of soda is better for knit goods than the lime bleach, for the reason that lime is extremely difficult to remove by washing, and its presence always tends to impair elasticity of the threads, and gives a dead feel. After two to three hours' action of the bleach liquor, wash to remove all excess, and give antichlor at 1° Tw. Do not attempt to hurry operations after the bleach, as there will always be a tendency to weaken the goods through neglect of simple precaution of ample washing.

After the antichlor treatment, wash well and with the aid of a good boil, and to then whiten if necessary.

The use of sulphuric acid after the lime bleach is positively injurious. Besides causing a deposit of sulphate of lime—as is shown by the sample of the goods sent—there is always a possibility of traces of acid remaining which can only tend to "burn" the goods.

As to the use of hypochlorite of soda, this applies with equal force to the use of the electrolytic bleach that is now coming more extensively into use in knit goods bleacheries; or to the hypochlorite of soda that is made on the premises by the bleacher himself. In either case the result will be the same, the bleach will be effected with the "active bleaching chlorine" contained in the solution, while the residual compounds, being completely soluble, are effectively rinsed out, leaving no compounds behind that are likely to form dangerous insoluble salts.

It might be well to use a good softening oil in the final wash water, which cannot help but improve the handle and condition of the goods. The above recommendations will in no way disturb the usual routine of the bleach house. Beta-Nephthol.

I do not think in this case a hot sour would be the proper thing. In the first place hot goods would dry out around the edges of the pile and consequently burn holes in the goods. The only advantage would be that the hot acid would act quicker, but a cold sour is quick enough for all practical purposes.

When using the cold sour, put the cold water in the tank and add enough sulphuric acid to make it stand 1/2° Tw. I have found that muriatic acid does the work better than sulphuric acid, for if any iron stains appear on the goods the muriatic acid takes them out. It costs a little more in the beginning, but the results will be more than satisfactory.

I never could see anything gained by the use of sodium bisulphite in bleaching. It is very dangerous if any of it gets in the air, for the moisture in the air changes it into sulphuric acid and this tenders the goods. It is even worse than chlorine if there is any

left in the goods. A practical bleacher can smell it without any chemical test.

The best method of putting chemicals into a boiling kier, if the kier has a vomit pipe, is in the center, with a movable bonnet, removing the bonnet and putting the dissolved chemicals down the vomit pipe while the kier is empty. See that the valves are shut at the bottom in case the vomit pipe is on the outside of the kier. Then put the chemicals in the empty kier. The chemicals should go below the false bottom and even if they do crystallize a little they can do no harm. Wash the inside of the kier before putting in the goods so that no chemicals will come in contact with the goods before filling up and boiling. When the goods are in the kier put in the water on top and when there is enough to cover the false bottom, turn on the steam. If there were any crystals in the kier they would be melted before the water starts to boil. When the chemicals are put in from the bottom of the kier, enter the water from the top. In this way the goods are wet before the chemicals touch them. I find a hose pipe to be just as handy as anything else for filling the kier from the top. The inside of the kier can also be washed with this pipe. Hector.

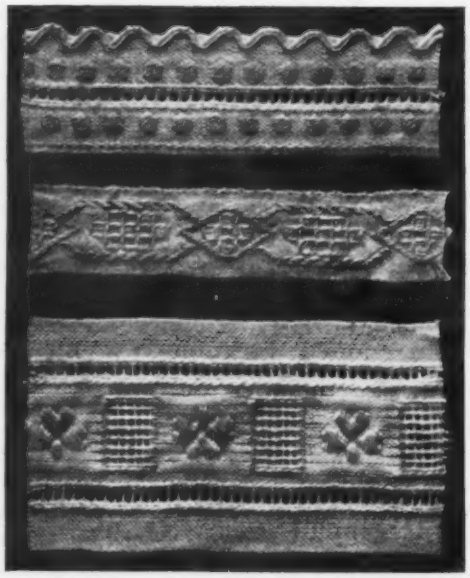
FANCY BRAIDS AND FACINGS

Editor Textile World Record:

I would like information regarding featherstitch braids and facings. The article we want to make is a strip about 5/8 inch wide with a scalloped edge like the enclosed samples. What kind of loom is required? The scallop is put on by a sewing machine. Must these goods be made on a narrow fabric loom or could a number of strips be made on an ordinary 28 or 30 inch loom? If a special loom is necessary please state the average production or picks per minute and number of strips being woven on one loom. What is the average construction for these goods? Are they finished before or after scalloping? What is the probable cost of finishing? What is the production of the sewing machine? How many looms to a machine? Are these goods made tubular? Would there be any advantage in this? If it is possible to weave these on an ordinary loom, please tell me how this is done? Meanix (2246).

The scalloped edge on the sample shown at Fig. 1 is made on the loom and not by a sewing machine. The coarse ply yarn at the edge is manipulated by a leno motion. This class of goods can be made on ribbon looms with multiple heads. The filling being fine, it is necessary to use two sets of superimposed shuttles. As the ribbon is only 5/8 inches wide from 52 to 96 widths can be woven at one time. The width of the loom depends on the number of shuttle. For 52 ribbons a width of 100 inches is required; for 80 ribbons, 160 inches; and for 96 ribbons, 200 inches.

FIG. 1



FIGS. 2 AND 3

The other two samples, Figs. 2 and 3, require two shuttles. The sample shown at Fig. 2 is made on the same kind of a loom as Fig. 1. As the ribbon shown at Fig. 3 is wider only 36 widths can be woven on a 100-inch loom; for 80 ribbons a width of 200 inches is required. The looms are not run much over 80 picks a minute. It is easy to adapt the jacquard motion to a plain loom and also to weave the ribbons in tubular form. It is impossible to weave these goods on an ordinary broad loom. Gaul.

Crape was invented about 680 A. D. by Sainte Badour, Queen of the Franks, and first made at Boulogne.

DYEING COTTON AND ARTIFICIAL SILK HOSIERY

Editor Textile World Record:

Enclosed is a piece of hosiery. The white portion is mercerized cotton, the brown part is plated with French artificial silk. I desire to know if it is possible to make a uniform shade of any color on hosiery of this kind. I have tried several times to do this, but get a heavier shade on the silk. Can this class of hosiery be evenly bleached, and if so, by what process?

Milan (2369).

It is possible to dye hosiery composed of mercerized cotton and artificial silk an even shade throughout, but the dyes must be very carefully selected, as the two fibers take the same color differently, and a proper choice must be made so that one will offset the other. Due regard must also be given to the temperature.

As a general rule, nitro or French artificial silks are apt to take fuller shades than cotton, hence the temperature of the bath should be kept as low as possible, at no time exceeding 120° F. From the statement by "Milan" it seems that he has allowed the temperature of the bath to get beyond the proper limit.

The best way to proceed with this kind of work is to make a few trials with suitable colors of the diamine group, until the proper shade is obtained, keeping the concentration of the bath as great as possible, not exceeding the proportion of 2 1/2 gallons per pound of hosiery. When the desired shade is obtained the color for the full batch is made up, and the dyeing continued as for ordinary cotton, except that no salt is added to the dye bath. For specially bright effects topping is resorted to with the aid of basic colors, and always in a luke-warm bath.

A method of preparing goods composed of mercerized cotton and artificial silk, especially the viscose and cuprate silks, is to steep the goods in a hot bath of tannic acid for several hours, then rinse, and work in a warm bath of tin crystals, in the proportion of 2 pounds of tin crystals to each 3 pounds of tannic acid. Rinse and dye in a bath with colors of the diamine group as before, but a slightly higher temperature may be used. The tannin-tin treatment serves as a resist for the colors on the artificial silk more than on the mercerized cotton.

Bleaching of mercerized and artificial silk hosiery is effectively done with hypochlorite of soda not exceeding 3/4° Tw., keeping the goods in easy motion in the bleach liquor for one hour or until a sufficient degree of whiteness is obtained. This is followed by a good rinse, then a weak muriatic sour at 1/4° Tw. or a bath of antichlor. Then rinse clean.

Cromarty.

CARBONIZING WITH ALUMINUM CHLORIDE

Editor Textile World Record:

Please inform me as to the difference in the effect on a felt fabric by the use of aluminum chloride instead of sulphuric acid for carbonizing. What is the difference in the treatment required?

Sulphur (2368).

When the operation of carbonizing with either sulphuric acid or aluminum chloride is carried out properly, there should be no difference in the goods afterwards. In either case the result is the same, a destruction of the vegetable fibers present, without any effect on the wool fibers.

Aluminum chloride is applied to the goods, in this case, felt, as a solution of about 9° Tw., the excess squeezed out, then dried, and the goods baked at a temperature of 250° F. for an hour. Wash to remove all soluble salts. This process requires a higher temperature to effect the complete destruction of the cotton or other vegetable fibers in the goods than with sulphuric acid which carbonizes very thoroughly at 175° F.

The installation for carrying out either process is practically the same, and no changes need be contemplated in switching from one to the other. Some carbonizers, however, fear that the increased temperature necessary for the aluminum chloride process has some influence on the wool, and point to the fact that much of it is harsh to the feel. The writer's opinion is that no such fears are to be given consideration if the washing after baking is well done, the harshness noticed being due to the presence of basic aluminum salts that have escaped the washing operation.

To increase the British woolen trade an Act was passed by Parliament in 1666, ordaining that all persons, of whatever rank, should be buried in woolens.

Knitting Department

KNIT GOODS SITUATION

The underwear end of the knit goods business is not in a very satisfactory condition at the present time, either from the viewpoint of the manufacturer, jobber or retailer. Many manufacturers have been shut down entirely or running three to four days a week for some time, and although many selling agents have made special trips to the West during the past month, we learn that little has been accomplished, for the reason that jobbers are not getting any active demand for merchandise and are not in a position to place duplicates, except in a very sparing manner.

Weather conditions have not been right as yet for any general opening up of fall underwear trade. This, of course, prevents any activity on the part of the retailer.

Manufacturers' sales agents report that the stocks in the hands of jobbers are not particularly heavy, still they are of sufficient volume to keep the financial heads from permitting the placing of additional business.

Some manufacturers have been naming lower prices, but it is believed that in general, low quotations have not brought quantity orders, and it is quite likely that most of the duplicate orders that have been obtained would have come along at early prices.

It is reported that both the Lion Mills and Royal Gem Mills of St. Johnsville are soliciting orders on twenty-five cent grades of women's ribbed vests and pants at twenty cents per dozen less than January quotation and on fifty cent combination suits at 12 1/2 cents per dozen less. It is also reported that Fuld & Hatch Knitting Co. are offering their line of men's eleven pound shirts and drawers which were sold early at $3.75, at $3.37 1/2 for delivery during October. Some buyers have criticised these manufacturers for making such concessions, claiming they have just received heavy shipments of cotton goods bought last January. They seem to feel that manufacturers should give them a little more opportunity to unload before changing their prices.

Manufacturers of fifty cent grades of vests and pants and dollar combination suits have maintained their early prices as yet, and claim to have orders on their books to run them for thirty to forty-five days.

Jobbers in the Southern part of the country are having a hard time of it. Europe, of course, is taking no cotton and as this country cannot consume the entire crop, the South, which depends so entirely on the cotton crop, is suffering severely from the European war. The staple has gone down steadily for six weeks, until within the last few days, it has recovered about a cent a pound, due in a measure to the enthusiasm aroused by the "buy-a-bale" campaign. It is claimed that it costs eight to ten cents per pound to grow the raw material and when it sells as low as nine to ten cents, the producer is working without a profit.

Underwear in general is not affected by the dyestuff famine, except in a small way. Some of the bleaching powder and also some of the stain used to imitate Egyptian cotton goods has been coming from Germany, but it is said that both of these can be produced here, although they will cost the manufacturers a little more money. Some numbers of worsted yarns are higher and those makers who do not produce their own yarns may be obliged to advance their prices to cover these higher quotations. Most underwear manufacturers of wool goods make their own yarns and have contracted for what will carry them through the season, so there will probably be no changes in the price of wool lines this year.

Jobbers' salesmen who are out soliciting spring business report only fair responses a yet. They state that retailers want to wait to see what happens before placing spring orders, and having heard of lower cotton quotations, to get lower prices on spring lines later on. Some jobbers have asked

manufacturers for lower quotations on their orders of men's balbriggans placed during June and July for spring delivery, but so far, we have not learned of any concessions having been made. These goods run from five to six pounds to the dozen and the jobbers seem to think that there should be lower quotations on goods that get into this weight.

Among the most important lines of men's balbriggans in the twenty-five cent grades is the Morris Mill line of carded yarn at $1.85 for 4 1/2 pound weight. This manufacturer uses combed yarn cuff and anklet and runs one entire mill on the one garment, which means a large production.

The Oneita Knitting Mills of Utica also have a twenty-five cent balbriggan garment in the market this season for which they are asking $1.90. The shirt has white striped collarette neck which makes a very handsome appearance and is a very attractive line for the retail trade to sell at twenty-five cents. We understand that a large volume of business has been placed on this particular number. For men's balbriggans to sell at prices between twenty-five cents and fifty cents, this same concern pays particular attention to lines at $2.50 and $3.00. It is understood that their production is well sold up within this range.

The Lawrence Mfg. Co. is one of the largest, if not the largest, manufacturers of balbriggan underwear in the United States. They have adopted a new packing for their entire line and it is said they will spend several hundred thousand dollars in an advertising campaign during the coming year. They make a very extensive line of balbriggans from $3.00 per dozen and upward and their advertising is quite sure to create a demand for the Lawrence brand.

The Lebanon balbriggan made in Pawtucket, R. I., is another line sold to the jobbing trade on which a large business is being done,—their five pound combed line at $3.50 being a popular number in many jobbers' collections.

One of the new things in underwear which we mentioned some months ago has now been placed on the market. It is a one button suit made by Fuld & Hatch Knitting Co. of Albany, N. Y. It is made with an opening in front like an inverted V with point reaching to the neck of the garment and the sides so constructed as to button the three thicknesses at one button at the point. The advantage claimed is that it does away with the nine or ten customary buttons, saving time of the wearer, as well as the annoyance caused by missing buttons and enlarged buttonholes. It is made for men, women and children and will no doubt become popular, especially so in the boys' numbers.

Up to the present time, we have only heard of one concern making any quotations on fall line for 1915 and that was an eleven pound men's ribbed shirt and drawer at $3.37 1/2.

HOSIERY

From various sources come various views on the hosiery situation. Some are optimistic in the extreme, others decidedly the reverse. There are those who see great possibilities in the future in exporting hosiery and there are those who at the present time can see no way of our supplying anything except white or unbleached goods.

The situation on account of the scarcity of dyestuff is becoming quite acute. Experiments have been made recently with logwood dyes, but so far, they have not proved satisfactory, nor have the chemists of this country been able to produce coal tar dyes at anywhere near the prices that they have been imported from Germany. At a meeting of hosiery manufacturers held in Philadelphia recently, a resolution was adopted to the effect that hosiery manufacturers should not take any orders for dyed goods to be delivered after January first. As Dame Fashion has decreed that women's clothing for next spring will be largely in black and white combinations, it will no doubt be a big season for white hosiery. On the orders so far recorded, a large proportion of white goods is noted.

Salesmen who have been soliciting retail trade for spring orders all report little activity, except on fiber lines and on these, retail-

ers are buying very freely, of men's fibers to sell at two pairs for twenty-five cents and on women's goods to sell at twenty-five cents a pair. This is a condition that is not at all satisfactory for the hosiery business in general, as it is believed by so many that this class of merchandise will not prove satisfactory to the consumer.

Mills making fashioned goods are all quite busy at the present time, in many cases working on orders that have been given for goods to take the place of those originally bought in Germany.

Two forces have been at work against each other and these have had the effect of keeping prices above stationary. One is the lower cotton quotations which would naturally tend to reduce prices. This has been counteracted by the dyestuff scarcity, which has been responsible for the fairly good business on low and medium priced lines. Now comes the scarcity of wood fiber to further complicate matters. It is made in this country, but not nearly enough to take care of the demand, and it is said it will take several months to increase the production materially. It is hoped by some manufacturers that the scarcity of fiber will be the means of helping the sale of mercerized goods which has been slow of late.

The fact has just been brought to our attention that England takes from Germany annually, about nine million dollars' worth of hosiery. As that source of supply will be cut off, American manufacturers will have an opportunity to take care of a portion of it, as well as to secure a share of the business of Canada and South America. No doubt, but that the English market will favor this country for some time to come, to the exclusion of goods made in Germany. It certainly looks as if there is now a good opportunity to begin exporting hosiery, underwear and other cotton goods. If this occurs, it will to some extent tend to maintain the price of the raw staple.

A scarcity of dyestuffs will probably give rise to a new fad for undyed hosiery for spring. This with a little advertising can no doubt be made a very strong selling feature, as the undyed feature will appeal to many consumers who now think that dyed goods injure the feet.

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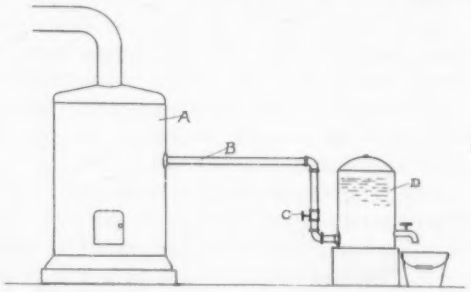
AN IMPROVED METHOD OF MAKING SOLUTIONS FOR KNITTING YARNS

BY CARDIGAN

In order to get the best results in knitting yarn we moistened the wool yarn by running it over a roller which revolved in a trough partly filled with a solution of lard oil, soap, paraffine and water. This solution was made up by the bucketful and heated until it reached the boiling point. It was then boiled until smooth. This worked well for a while, but on some days we ran on cotton and did



CAN FOR BOILING SOLUTIONS FOR KNITTING YARNS

not have any use for the solution. On these days the buckets would stand around the room and catch all kinds of refuse, including tobacco and pieces of yarn waste. This made the solution so dirty it was impossible to use it on white yarn and frequently we had to throw it away. Finally we arranged a can in which to boil the solution. The illustration shows how this is done. We cut a hole in an old water cooler and ran a steam pipe into it from the boiler. In this way we were able to prepare the mixture in larger quantities and could draw it off as we used it, thus preventing the accumulation of dirt and other refuse. A is the boiler; B, steam pipe coming from the boiler; steam is turned into can at C; D, galvanized iron can with faucet.

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Falcon, a French mechanic, invented in 1728 the first machine for the management of the loom harness, anticipating in most important respects the Jacquard.

AN IMPROVED UNDERSHIRT

The illustration shows an undershirt for children or invalids for which a patent has recently been issued and which is described by the inventor as follows: The object to provide a garment is without fixed fastening means so that there are no hard or cumbersome buttons and materials necessary to be added to make button-holes, providing an easily adjustable garment which may be fastened with proper safety devices passed through the fabric. The longer extensions on the flaps are carried over to form the shoulder portions and brought down under the more dependent portion of the body and act as a support and also a brace to throw the shoulders in correct position.

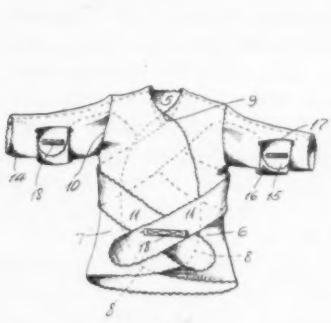

FIG. 1

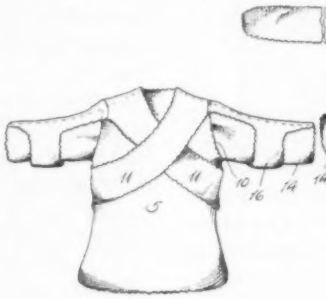

FIG. 2

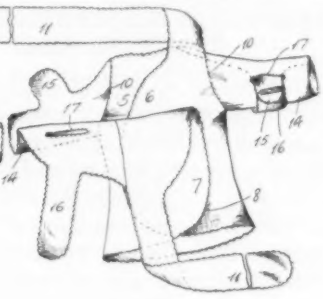

FIG. 3

Fig. 1 is a front view of the improved garment showing the flaps and bands fastened securely by pins to complete the shirt. Fig. 2 is a rear view of the same position as Fig. 1. Fig. 3 is a detail view showing one of the flaps forming the arm, a shoulder and part of the chest portion turned down upon itself to show the configuration of the garment.

The back of the shirt is formed as shown, of one piece of woven fabric provided with the flaps, which are of such configuration and of sufficient width to overlap across one another to form the front of the garment. The lower portion of these flaps are practically formed straight across with slightly rounded corners. The extension of these front edges upward meet to form an opening for the neck. This edge is further extended together with an edge forming a portion of the arm hole. The distance across this portion of the fabric is sufficient to extend from the neck to the shoulders, its further extension being continued to form the band of such length that it can be carried down and across the back under the opposite arm opening, and from this position carried across the front of the garment, preferably of such length as to extend beyond the rounded corners. The opposite side or flap is similarly formed, the bands of the same length, the second band crossing over the first on the back and lapping over the former band about the median line of the garment.

The arm inclosing portions of this garment are shown as separate pieces of fabric joined at the arm hole and of such length from the shoulder outward as to reach the wrists, the under portion being of one piece of fabric, the inner edges being joined to the arm hole. This portion is one piece of fabric, and of sufficient width to cross the arm and overlap along its free and upper edges, these edges being extended intermediate of their ends to form the flaps. In the material adjacent to the flap is formed an opening elongated and practically parallel with the general axial position of the arm, and of sufficient width to pass the flap freely through it. This flap is of greater length than the other flap, forming an encircling band which is carried over the other, after the latter is inserted and in conjunction with the edge joining the band completing the shoulder protection by overlapping the upper edge of the back portion, and after being drawn to the tension desired, is secured to the flap by

proper fastening devices passed through the two thicknesses of fabric.

It will thus be readily seen that the garment, when it is in unfolded position, can be laid out flat on any desired surface and the infant or invalid upon whom it is desired to be placed may be laid upon this back portion, and the flaps and bands carried around the portions that they are designed to cover without unnecessary rolling or disturbance of the wearer.

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THE PREVENTION OF SECONDS IN A KNITTING MILL

BY TRENTON

The problem of keeping down seconds in a knitting mill is one on which many manufacturers have spent a lifetime and much money. The attempt to prevent seconds has sometimes cost more than the real loss in seconds. Seconds collect from a hundred causes, but the most important are oil spots, poor winding, bad knitting and mistakes. Cleanliness goes far to reduce the number of seconds. Oil spots always mean seconds, even with the so-called stainless oils, for even with the latter the goods will turn yellow in a month or two and will be returned by the buyer. This starts trouble, for no one can place the responsibility for an oil spot. There is not much chance for oil spots around a winder, so we will take up the next step, the knitting frames. The careless oiling of a machine by letting the oil can drip, or putting perhaps too much oil around the bed plate or cylinder ring, will cause the oil to drop through to the fabric below. Sometimes these drops get on the take-up rollers and leaves a black spot at every revolution of the roller. The oil that drips from the can or any clean oil is the cause of future trouble. Black oil can be cut out at the cutting table. Oil spots also occur from other sources such as leaky bearings, elevators, sewing machines, oil cans and oily tables. A knitter who uses a leaking can over a valuable roll of goods in sight of a bright red "Cleanliness First" sign, ought to be looking for another job a few minutes later. This also applies in the bleach house to a man who will squirt oil around an extractor in motion, the extractor having no protection from the spattered oil.

Operators of sewing machines also swell the list of seconds by flooding a machine or using the leaky tin oil can. Dirty or oily yarn streaks must be fought out with the spinner and if a perfect white garment of the better grades is wanted this will be a hard proposition.

Poor winding results in large bunchy knots, loosely tied knots and spinners' waste. Keep the strippers closed. Otherwise the result will be bales and bunches in the goods. New ways of making seconds are constantly appearing. The most common cause is yarn that has twits, soft ends or uneven spots. All these defects mean holes. A tight fabric with poor yarn, too long a draw on the dial stitch cams, tight or hard pull on the take-up, poor needles, worn cams or thread guides, guides too close to the needles, cut dials or cylinders, all tend to make seconds.

A knitting frame must be kept clean and all parts watched for defects. The old saying "Good winding is half the knitting" does not apply in all cases. Do not let waste collect around the needles or in the yarn rack. Do not let an operator run too many machines. This might not seem important, but notice an operator that takes care of say eight large latch machines. When things seem to go bad, the machine does not get the necessary attention. The operator with six machines watches the work closely, has more time to look around and produces more work than the operator with eight machines, other things being equal.

It is essential to keep yarn on bobbins on a covered shelf out of reach of the floor dust and dirt. Do not let the rolls or skeins of knitted cloth get on the floor. Have the cutters call attention to all the imperfect rolls. This might get tiresome for a time, but it helps in the end. Make a note of all these imperfections and get after them. It will be surprising how soon the cutters stop calling up the knitter to look at bad rolls.

A mistake in a knitting mill, from a winder who mixed the yarns to the buttonhole operator who makes a buttonhole upside down, means a second. A knitter puts up the wrong yarn, seconds; the cutter gets a cer-

tain size too short, seconds. Seamers get sleeves in crooked, or take off too much, seconds. Finishers run crooked lines, operators put lace on wrong, or a different style than called for, seconds. Button-hole, button sewers, tape girls, inspectors may cause seconds. A bad needle in knitting, a finished garment caught in a sewing machine belt, a drop of stamping ink, or a drop of paste in the shipping room may make a second at the last process. How to prevent seconds: Fight them, fight the leaky oil can, dirty floors and walls, cloth bins, stock rooms, careless help. "Cleanliness First" will help the fight.

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PIECE WORK RATES FOR UNION SUITS

Editor Textile World Record:

Please give me the piece work rates for making men's union suits. Westford (2373).

A manufacturer of union suits replies as follows: The prices quoted below will probably be different from other makers, as we only make men's goods to measure. These prices are as follows:

Trunk Length—Athletic Neck—Union Suits:

Stitching	doz.	$ .17
Covering		.15
Facing for button-hole		.05
Binding for buttons		.04
Stay around neck		.02½
Edge finish around neck and down front		.08
Edge gussett		.03½
Lap gussett		.05
Button-holes		.06
Sew buttons		.10
Finishing arm-hole		.06
Edge bottom of trunk		.02½
Cutting, pressing, folding and boxing, each	hour	.15

Prices on long sleeves, ankle length or short sleeves, knee length union suits:

Stitching	doz	.19
Covering		.19
Facing for button-holes		.05
Binding for buttons		.04
Stay around neck		.02½
Finishing around neck and down front		.08
Edge gussett		.03½
Lap gussett		.05
Button-holes		.06
Sew buttons		.10
Edging cuffs on arms and legs		.05
Cutting, pressing, folding and boxing, each	hour	.15

Garnier.

I give below the prices paid by one of the large, representative middle west mills making a complete line of men's union suits in all qualities and weights. These prices are for men's union suits, long sleeve and ankle length—with "sewed on" cuffs and anklets. We do not believe that these prices will be found to vary much from the prices paid by Eastern mills, although a wide variation will be noted between mills, in the number and character of the various operations required to finish a union suit. In a general way you

	1	CUTTING	5 ¢
	2	CUTTING SLV.	¼ ¢
	3	CUTTING CUFFS	⅜
	4	STAMPING	⅜
	5	WHIP FLAP	1
	6	SEAMING	6
	7	TURNING	¾
	8	COV SEAMING	4½
	9	NK MARK	½
	10	NK RUN	¾
	11	CUT FRONT	1¼
	12	FACING	4
○	13	BUT STAY	4
	14	SEAM	4
	15	COV SEAM	2
	16	BIND NK	1¼
	17	TK COLLAR	1
	18	EDG. FAC	1¼
	19	TK FLAP	1¼
	20	MK BUT HOLE	1½
	21	BUT HOLE	2½
	22	MK. BUT	1½
	23	BUT SEW	2¼
	24	INSPECT	3½
PRESS	25	FOLD ON	2½
	26	FOLD OFF	2½
	27	BOX	½

can safely count the cost of finishing one dozen of men's union suits to be $1.00 a dozen.

Seaming		$ .16
Interlock cuff and anklet		.02
Turning		.01
Overseaming		.09
Facing		.02½
Stay		.02½
Sew collarette		.05
Covering collar		.01½
Neck hanger		.02

Crochet	.09
Gores	.05
Marking back	.02¼
Back stays for buttons	.08
Two line bott facing	.02
Button holes	.06
Marking front buttons	.02½
Button sewing	.05
Stitching cuffs	.03
Trimming and buttoning	.04½
Pressing	.06
Final inspection	.05
Total	$ .99¾

Mutig.

The accompanying price list is given for half-dozen bundles as that is the way they are sent from the cutting room for convenience in handling. Inasmuch as finishers use different methods in process a list of prices is confusing without some explanation of the different operations. I have numbered the twenty-seven checks in rotation. It will be noticed that there are two each of seaming and cover-seaming, Nos. 6 and 8 and Nos. 14 and 15. At seaming No. 6 the front of the suit is not closed, but it is seamed only to the crotch, leaving an opening so that the facing and button stay (Nos. 12 and 13) may be put on easily. This completes the garment up to No. 16. Edging the front and collar with silk, No. 18, is necessary only when a fancy stitch is required down the edge of the front. No. 19, tacking the flap, is a small piece of cloth tacked on as a buttonhole stay in the flap. The prices given are based on the supposition that a good machine operator will earn from $11 to $12 per week of 54 hours and are about what is termed union wages. Massasoit.

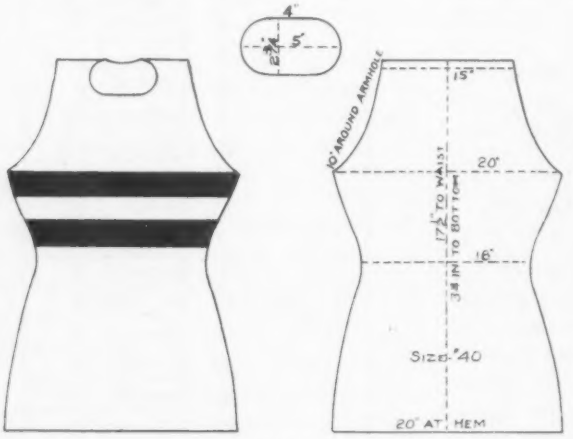

FIG. 1

FIG. 4

THE MANUFACTURE OF ATHLETIC SHIRTS

BY HAWICK

In making athletic shirts there is a varied assortment of styles and it seems as if those manufacturers who have the largest number of styles are the ones who are attracting the most attention to their lines and are therefore doing the largest business. Probably the largest seller in athletic shirts are the white cotton bleached shirts which sell for $3.00 per dozen or $33.00 per gross. In making these garments the yarn is usually used in the natural color and the cloth bleached in the piece. The majority are made of 1/16s yarn.

Most of these shirts are cut from a pattern similar to that shown at Fig. 1. A few manufacturers are making them without shaping. They do this by running the yarn on a machine the exact width of the size they wish to cut. They then cut the cloth in length 34 inches long. Cut the neck in at one side and then cut the armholes. The garment is then ready for the sewing operations. The first operation is the sewing of the shoulders, which is usually done on an overlock or cover edge machine. The neck,

armholes and buttonholes are then hemmed. The garment is then trimmed, inspected and pressed. They are usually pressed on an

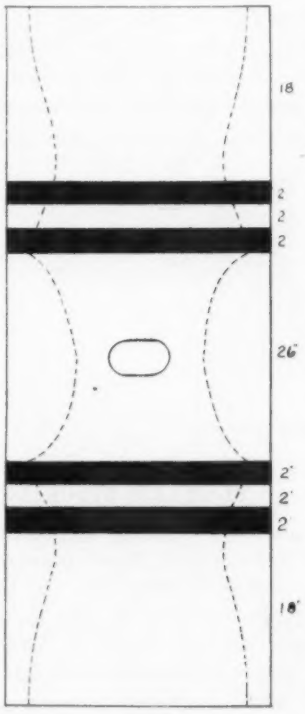

FIG. 2

underwear press and are folded and packed six in a box. The shaped garment is made in the same way with the exception that the sides are seamed.

The garment shown at Fig. 1 is one that no doubt will become very popular. It is usually made in worsted and has a chest stripe composed of two 2-inch stripes two inches apart. The cloth for this garment is knit in lengths as shown at Fig. 2, and is cut so there will be no seam on the shoulder.

The garment shown at Fig. 3 is made the same as that shown at Fig. 1, with the exception that in making the length the 6-inch chest stripe is one solid color.

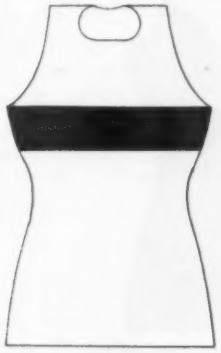

FIG. 3

FIG. 5

Fig. 4 shows a sleeveless shirt made with a 2-inch alternate stripe. This style is not a very staple one, but quite a few have been sold on special orders. It is cut on the patterns shown at Fig. 1, and is made the same as the other sleeveless shirts.

The sleeveless shirt with a sash front is shown at Fig. 5. This style is made of plain cloth and has a 4-inch sash sewed from the shoulder to the hip. The sash, which is made on a flat machine, is sewed on before the garment is seamed up the sides. This

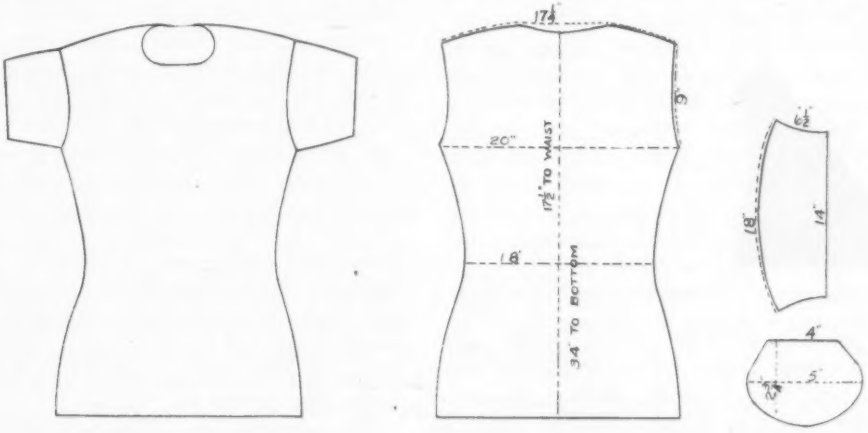

FIG. 6

style is made in both cotton and worsted. The garments shown in Figs. 1, 3, 4 and 5 are also made into quarter sleeve garments.

Athletic shirts are usually made of the following sizes of yarn: Worsted—2/32, 2/26, 2/18, 2/13. Cotton—1/16, 1/10, 2/12.

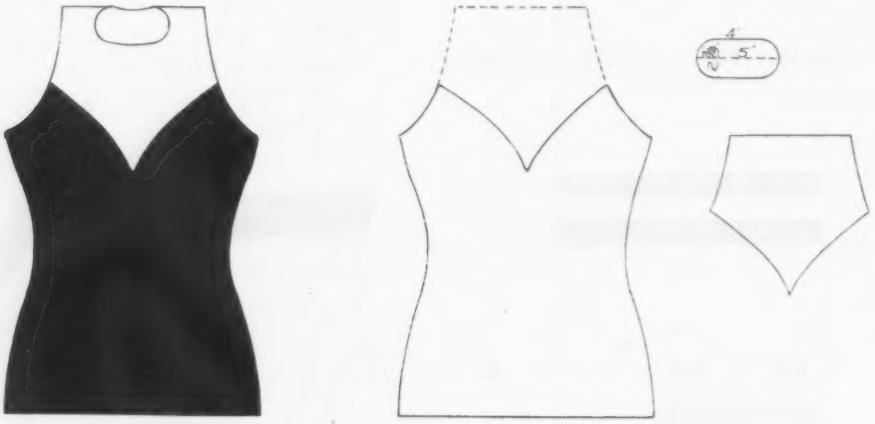

FIG. 7

Patterns for the quarter sleeve garment are shown at Fig. 6.

Fig. 7 shows a very popular two-color garment. This garment is made with the upper portion out of a light color while the lower is made of a darker color. The patterns for this garment are also shown at Fig. 7. In making this garment the first operation is the sewing in of the yoke, the other operations are the same as for the other garments. This garment is the same as that shown at Fig. 1, except that the yoke is cut out. Fig. 8 shows another two-color garment which is made about the same as the one shown at Fig. 7, except that it is cut diagonally in half.

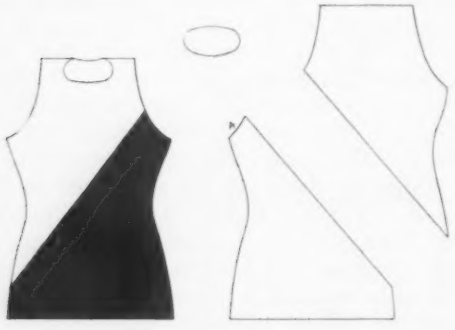

FIG. 8

A SEAMLESS STOCKING

The seamless stocking shown in the illustration has recently been patented in this country and is described by the inventor as follows: In order to fit the human foot a seamless stocking should be larger, that is to say, longer and wider along the foot than it is through the corresponding portion of the top of the foot. The new stocking is knit with a sole portion between the heel and toe pockets formed of stitches of sufficiently greater length than the corresponding courses of the top of the foot to make the bottom portion of the foot longer and wider than the top portion, thus affording ample room for the bottom of the foot, and drawing the top portion neatly over the foot without wrinkling. This prevents strain along the bottom of the foot, would tend to cramp the toes, draw the toe joining on the top of the foot too far forward, and drag down the reinforced portion above the heel. It thus fashions the stocking to the form of the average foot. This novel construction is permanently imparted to the stocking in the process of knitting and cannot be lost in subsequent laundering.

The construction is designed especially for a fine grade of hose in which the fabric of the leg and the top of the foot is knit with

fine yarn, and in which the portions which are subjected to the greatest wear or strain are so reinforced that this thin and delicate appearing stocking will wear as well, as one knitted throughout with much heavier stock. In this class of hosiery the insertion of a splicing thread throughout the sole of the stocking results in making the fabric of the sole of the foot shorter, tighter, thicker, and

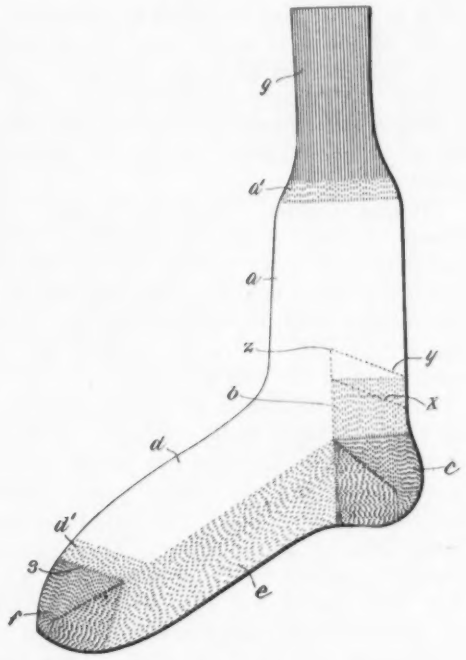

FIG. 1

less elastic than the corresponding number of courses on the top of the foot which are knit with the regular or finer yarn only. As a result of this structural characteristic there is a greater strain lengthwise from the toe to the rib top along the sole around the heel and up the back of the leg, than from the toe, over the instep and the front of the ankle and leg, when the stocking is worn. This produces a slackness over the ankle which causes the stocking to wrinkle and set badly at that point where it is most exposed to view when worn with a low shoe, and is objectionable.

If, as is usually the case, the stockings are spliced or reinforced at the back above the heel portion, this part is also shortened as compared with the same number of courses on the front of the ankle, and accentuates the result described. The strain of the fabric around the heel also tends to drag the reinforced portion above the heel downward at the rear as indicated by the dotted line, x, Fig. 1, and it is necessary to carry the reinforcing a number of courses higher on the leg as indicated by the dotted line, y, in order to insure that the stocking will be properly protected from the wear of the shoe at the rear above the heel. This carries the side portions of the spliced or reinforced portions higher than is necessary or desirable as indicated at z, and causes the splicing to show unnecessarily when the stocking is worn with low shoes. Again, the strain around the bottom of the foot and back of the leg before alluded to has a tendency to draw the looped union, s, where the upper edge of the toe pocket is united to the outer edge of the upper part of the foot portion, too far forward upon the top of the toes where it will be exposed to undue wear.

MANUFACTURING KNIT BOOTS

Editor Textile World Record:

Kindly give me as much information as possible regarding the enclosed knit boot, shown in the illustration; how it is made, on what kind of a machine, etc. Mackie (2285).

The sample has been knit with a thick yarn spun out of a coarse wool of strong felting properties and it may readily be believed that the thread structure is an advantage in felt intended for this purpose. The sample has been put before a firm which manufacture finishing machines and they see no obstacle in the way of getting the desired amount of felting upon the fulling machine. A considerable amount of shrinkage would have to be allowed for and it would be necessary to make tests upon a measured area of fabric in order to arrive at the initial size of the boot. J. Strand.

Columbus found the wild cotton plant growing on Hispaniola and other West Indian Islands.

Dyeing, Bleaching, Finishing, Etc.

MODERN REQUIREMENTS OF DYED COTTON

BY CULEBRA

It can safely be asserted that nowadays there are artificial dyes on the market which have all round properties of fastness superior to any of the natural coloring matters, not excepting indigo, and also that cotton can now be dyed faster than wool. As regards indigo the artificial vat colors are at least its equal in fastness to light and its superior as they lack its chief drawback of rubbing.

All this is very modern. Sir William Perkin died in 1907 and he only lived long enough to see the first vat color, putting artificial indigo aside. In his later years he was little interested in the industry he had founded, but in the writer's presence Sir William examined the formula of that extraordinary color, Thio Indigo Red, with interest and took a small sample of the vat color to his laboratory at Sudbury. It must also be remembered that the first direct cotton color dates from 1884. This was Congo Red and it was long before the range was completed with a direct green. The first basics had by this time given a bad name to the aniline dyes and there is a good deal of misconception about the artificial dyestuffs, which are still all "anilines" in the public mind.

In woolens the most important requirement is fastness to light; in cottons fastness to washing is at least as important and often more so. Now the properties of the chief groups of cotton dyestuffs also used for wool may be generalized as follows:

Basic Colors. Brilliance is their best feature. With few exceptions they are fugitive to light and indifferently fast to washing. They are faster on wool than on cotton. They are principally useful for topping direct cotton colors to give brighter tints and in calico printing because they do not bleed on white untannined cloth.

Direct Cotton Colors. In this group there are wide differences. Some are as fugitive to light as any of the basics; others are very fast. Many of them are fast to washing and many of them can be improved in this respect by after treatment, for instance with copper sulphate. They go equally well on wool as a rule and are faster to milling than many of the acid wool dyes, consequently they hold a high place in wool and union dyeing. In calico printing their property of dyeing cotton direct is a positive drawback as they readily bleed on to the adjacent white.

Sulphur Colors. Here is another new group. Cachou de Laval, the first of them, certainly, was early enough on the market, but it was not a coal tar color and the modern sulphur dyes, all of them coal tar colors, are not related. As a group they are not mentioned in the first edition of "A Manual of Dyeing," published in 1893 and Cachou de Laval is stated to be "unique". The first of the modern class was put on the market about 1897 and for some years blacks, browns and later blues, exhausted the tinctorial capacity of the group. They had unpleasant features for the dyer in many ways. The baths had a bad odor and were loaded up with dyestuffs and ingredients, often exceeding the weight of the cloth. Then came a gradual improvement in the strength of the colors and consequently in the composition of the baths and in the range of available shades. Practice and experience led to better management of the dyeings. Now the range is one of the most important for the cotton dyer.

The method of dyeing is similar to the indigo vat, but simpler. The colors are reduced with sulphide of sodium and reproduced upon the fiber by oxidation. The result in some cases is superior to indigo dyeings. The colors generally are satisfactorily fast to light and very fast to washing, and, moreover, they are cheap. After-treatment as in the case of the direct cotton

colors improves the fastness and they can be brightened somewhat by after-treatment with peroxide. Their only drawback is a very small one and generally absolutely negligible; they are all easily attacked by chlorine, some being rather more resistant than others. Their properties point them out as being excellent dyes for cotton garments and they are largely used for these purposes.

Vat Dyes. These are the most modern class of dyes. They are very valuable to the cotton dyer for many important purposes. Practically the only drawback is the question of expense, but this is balanced by the method of use, for instance in light shades for cheese warps. These give colored effects of the most beautiful tints obtainable for shirtings and blouses, which can be sent to the laundry time after time without affecting the color. The launderer could not bleach out the color if he tried. As the colored thread is only a trifling part of the whole fabric the expense of the dyestuff is a small item. Some manufacturers have used these dyes to good advantage and there are shirts on the market now that are practically laundry proof.

Something might be said about aniline black, para red and the other insoluble azo colors developed on the fiber. These are specialties with distinct and valuable uses and they help considerably to satisfy modern requirements in dyed cottons. Pigment dyes are of course fast on any fiber, especially khaki, chrome yellow and the copper green produced by soaking cotton or linen with a solution of cuprate of ammonia. This process also waterproofs the fabric. The chrome mordant dyes fixed with tannin and a reducing agent such as tartar emetic or lactic acid are still among the most reliable, and may one day supplant the basic dyes altogether. We have so many different ways of producing even the fastest dyeings on cotton that the conflict between dyes and processes is often decided from the point of view of dyeing expenses.

Apart from the question of classes of dyestuffs now available great advances have been made by the color makers in the regularity of quality. Dyeing is not a precise laboratory operation. With all the care taken by the color makers there was formerly from time to time a variation which could not be remedied in the dye house in successive lots of the same dyestuff delivered. The color houses seem to have got over this difficulty, but at the same time the dyer will probably never overcome the difficulties of variation in the goods he has to deal with.

It is difficult in fact to note any direction in which requirements of modern cotton dyeing are not satisfied, especially if the definition of "grand teint," the obtainable limits of fastness, given by M. Valette, the laboratory chief at the Gobelins, is adopted. He laid down that a dyeing which keeps its intensity until the garment or other cloth is worn out, at the same time being subjected to all the treatments necessary for constant use, may be said to be dyed "grand teint". Although fastness is a relative term we have not one but several classes of dyes which satisfy this definition.

As regards cotton goods, a French chemist, M. Ovigneur, has stated both the degree of fastness obtainable at present and also roughly the price which this particular degree costs. The prices refer of course to the cost in France, but the difference will not be large in America and at any rate the comparative cost of the classes holds good and is very interesting.

1. Fastness to light equal or superior to that of indigo at a cost of dyeing hardly more than 8 cents per pound by means of the direct cotton colors.

2. Fastness to light as above and fastness to washing equal or superior to that of indigo, that is to say that the dyed yarn can be woven with white without bleeding on to the white thread in the laundry, obtainable by the sulphur colors at a price of 14 to 20 cents per pound.

3. Fastness to light, to the most thorough washing and to chlorine, equal or superior to that of the best alizarine reds by means of the vat colors

As regards cost these vat colors vary within wide limits. Whereas pale shades may be obtained at less than 12 cents per pound, medium shades obtained with the most expensive of them may cost several dollars. The price is justified not only as

regards the initial cost of the color but also because of the expense of the process of dyeing. The actual cost of the dyestuff tends to decrease as they come more and more into use. Whether the processes will be much simplified is another question. These dyeings entail a considerably diminished output in the dye house and this has to be taken into consideration in counting cost. Colors which will stand bleaching have always been dear. In 1905 there were only five available: Alizarine red and violet, aniline black, iron buff and indigo blue. Nowadays there are thirty coloring matters on the market faster than alizarine red, and by mixing these colors a complete gamut of shades is obtainable, with possibly the exception of some tints of green.

MEETING THE DYESTUFF FAMINE IN ENGLAND

By Our Regular English Correspondent

How to obtain a sufficiency of dyestuffs in view of the situation of German trade is almost as acute a problem for England as for America. Hitherto, English dyers have relied for their supplies principally upon German color works whose agents have maintained large stocks of dyewares in the chief consuming districts. Supplies of German colors have ceased, the stocks are approaching absolute exhaustion and prices have of course risen. Sixty cents has been paid for color that could be bought at fifteen cents in July and there is no saying what heights prices may touch if the dyestuff famine continues. Purely as a matter of expense the extra cost is serious and even the best provided commission dyers have had to raise their prices for dyeing. Still more serious would be a state of affairs which would preclude the dyeing of goods for want of material at any price. The danger is appreciated and means of averting such a contingency are being considered.

The expedient of appointing a committee to consider and report is perhaps not the best way of getting work done and it has often been used by British Governments as a means of shelving awkward questions, but in the case of the new Committee on Chemical Products it may be freely supposed that real business is intended. It is composed of some of the most eminent scientists—Prof. Raphael Meldola, Prof. W. H. Perkin, Dr. G. T. Beilby and Dr. J. J. Dobbie among them. It includes an English color maker of proved ability, Ivan Levinstein, a dyer in the person of Milton S. Sharp, president, Bradford Dyers' Association, and several officials. The personnel may be trusted to delay as little as possible in deciding upon "the best means of obtaining for the use of British industry sufficient supplies of chemical products, colors and dyestuffs of kinds hitherto largely imported from countries with which we are at present at war." Not all the dyestuffs used in England are imported and not all that are imported come from Germany, but the bulk does.

Such data as are available show that during 1913 some 41,203,000 pounds of coal tar dyestuffs was imported and had a value of roundly $9,500,000. The domestic production in 1907 was 15,500,000 pounds valued at $1,865,000. Since the latter date the British production has doubtless increased, but the business remains chiefly in the hands of the two firms, Levinstein, Ltd. and Read, Holliday & Sons, Ltd., the former devoting attention particularly to cotton colors and the latter being associated more distinctively with dyes for wool. The imported dyestuffs are classified and three-fourths of the whole, or 31,700,000 pounds, figure as aniline and napthalene dyestuffs. Some 6,800,000 are returned as alizarine and anthracene dyestuffs and the only remaining important class is the 2,675,500 pounds of synthetic indigotin. The figures are cited to give an approximate idea of the value of the British market.

These imported colors are made under patents and it is of course impossible to contemplate a condition which would restrain British firms from making for themselves articles which the foreign patentee is no longer able to supply. The Board of Trade has accordingly issued rules whereby British patents held by enemy subjects are made liable to suspension. Applicants for permis-

sion to manufacture under German patents have to satisfy the authorities that they do intend to manufacture or to carry on the patented process and also that it is to the public interest that this should be done. The patentees and licensees are to be officially notified that application has been made. Notice is to be served further through advertisement in the official journal. A short period will be granted to the opposition and the date of hearing will be announced in advance so that a representative of the patentee may attend and be heard. Circumstances are to determine whether grants made under the license shall be exclusive or not. It will be observed that the rules are made with every show of fairness towards the alien patentee. They do not destroy, but only suspend, his patent pending the conclusion of the war and the disclosure of the attitude of the German and Austrian authorities towards patents held by British subjects in these countries. Should British patents be cancelled in Germany it will be open to cancel German patents in England, but meantime this step is not being taken. Under a former Act enemies' patents were declared invalid for the duration of the war and for six months longer, which indefinite period is quite valueless to color manufacturers. Under the new Act the Government expressly reserves liberty to issue rights not for the period of the war, but for the period of the patent. Practicality demands no less, for without knowing definitely the duration of his license no manufacturer can be expected to incur the probably heavy outlay upon the plant needed to make the article in question.

The substantial justice of these dealings with the enemies' patents may be left to the judgment of impartial outsiders. Meantime, Americans of average good memory may experience surprise that England, at this time of day, should be dependent upon foreign factories for its dyestuffs. They may ask, was there not a Patents Act dated 1907 which made the working of the patent within the United Kingdom compulsory? Did they not hear great accounts of all that the Act was doing for England and of what it was expected to do in the future for the benefit of manufacture in Britain? There was, and indeed is, such an Act providing in one of its most important clauses that "at any time not less than four years after the date of a patent any person may apply for the revocation on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom." The Act came into being and it bore certain fruits: As many as a dozen new factories were traced directly to its influence and an indefinite number of licenses to manufacture were granted to concessionaires, upon easier terms than they could have otherwise have commanded. Factories were built and there is reason to believe that machines were put into some of them, but this sequel did not follow in all cases. The factories erected in England nominally to produce synthetic indigotin are not known ever to have produced an ounce of the dyestuff for market and the three German dyeware companies with British "factories" are as unable as their colleagues to deliver new supplies.

The Act in question fulfilled its object until it was emasculated by Mr. Justice Parker's interpretation, given in the Hatschek case. To go into the whole matter would be to stray far into the wilderness of legal technicalities and it must serve to give the gist of certain judicial remarks. The Court declared that under the rules which were initially in force the patentee was put on his defence before proof of failure to work to an adequate extent had been given. The unfortunate patentee had to disclose, perhaps to some competitor, a part of his business which he did not wish to disclose and the Judge was firmly of the opinion that the onus should be on the applicant. The dictum may seem a small one to thwart the effect of the compulsory-working provision, but upset it it did and since this decision the clause has been virtually a dead letter. The recent efforts of the Manchester Chamber of Commerce to secure that the law shall be interpreted as it was formerly, subject to some safeguard against abuse, have not yet been crowned with success, but success may follow. The experience gained by textile

people during the early stages of this war assuredly does not dispose them to rely upon factories in a foreign and unfriendly land for supplies of prime importance to their industry.

It would be difficult to say to what conclusion England may not be led in respect of the color manufacturing industry. There are great chemical works in Britain, but their products are the heavy chemicals, in respect of which German competition is not a factor of much account. Color making is carried on in comparatively a small way and it is not clear that it can be conducted profitably as a sole industry under the conditions governing British trade policy at present. A manufacturer buying tar and selling color depends greatly upon the disposal of by-products, whether upon their sale to others who can use them or upon their manufacture up to an advanced stage. It follows that the plant required is expensive and that the return upon the outlay is somewhat remote. Responsibility is not expressly accepted for the statement that a plant to manufacture synthetic indigotin costs $4,500,000, but such is the estimate mentioned in the trade. Obviously capitalists will not put down the large sums required if their colors when manufactured are bound to cost more than German makes and if, when the war is over, they have to face unrestricted German competition. It is already alleged by British makers that Continental colors are dumped in England and sold at pence per pound more cheaply than in Germany and this difference handicaps them in the home market Whether England is prepared to depart from its standard policy and to give color maker tariff protection, or whether the Government is willing to grant a bounty, remains to be seen. At all events the alternative methods of creating a domestic color manufacture will be considered.

—:—

Felt-hat manufacturers take St. Clement for their patron, because the saint, before starting on a long pilgrimage, put soft wool inside his shoes, and found at the end of his journey that the layer of soft fibers had been converted into cloth by the action of his feet.

THE GERMAN COMMISSION ON THE FASTNESS OF DYES

From the Dyer and Calico Printer

(Continued from September.)

5. No change of color, and little or no bleeding. Dyed with 2 per cent. of Palatine Scarlet A, 10 per cent. of Glauber's salt crystals, and 10 per cent. of tartar preparation, entering at 60° C., boiling up in 20 minutes, and boiling one hour.

Fastness of Dyed Cotton to Perspiration

The sample is mixed with its own weight of white unsized cotton, and soaked for 10 minutes at 80° C., in a bath containing 5 c.c. of neutral acetate of ammonia (commercial, 7 1/2° B.) per litre. Dry without rinsing.

1. Color paler. Much bleeding. Dyed with 1 per cent. of Diamine Black BH, above.

3. Color unchanged. Bleeding. Dyed with 1 per per cent. of Diamine Black BH above.

5. No change or bleeding. Dyed with 20 per cent. of Indanthrene Blue RS paste.

Fastness of Dyed Wool to Perspiration

The sample is dabbed with a 10 per cent. solution of common salt or treated with acetate of ammonia as described under cotton. In the former case the salt is allowed to dry on and is then brushed off. In the latter white wool is mixed with the sample. The following types were established:

A. For the Salt Test:

1. Much change of color. Dyed with 2 per cent. of Amaranth, 10 per cent. of Glauber's salt crystals, and 10 per cent. of tartar preparation, entering at 60° C., boiling up in 20 minutes and boiling for 1 hour.

3. A good deal of change. The dyeing was done with 2 per cent. of Wool Green S, 10 per cent. Glauber's salt crystals, and 10 per cent. tartar emetic, 1 hour at the boil.

5. No change of color. Dyed with 2 per cent. Brilliant Groceine 3B, 10 per cent. Glauber's salt crystals, and 10 per cent. of tartar preparation, beginning at 60° C., boiling up in 20 minutes, and boiling for 60 minutes.

B. For the Acetate Test:

1. Color unaltered or very slightly. Bleeding. Dyed with 2 per cent. Azo Yellow as above.

3. Color unaltered. A little bleeding on to the white wool, none on to the cotton. Dyed with 2 per cent. Amaranth as above.

5. No change of any kind. Dyed with 7 per cent. of Palatine Chrome Black 6B as above.

Fastness of Dyed Cotton and Wool to Alkalies

(including street dirt and dust)

A solution is prepared with 10 grammes of quicklime, and 10 of 24 per cent. ammonia per litre. The dyeing is dabbed with this and brushed when the stuff has dried on. The results were, on Wool:

1. Much change of color. Dyeing with 2 per cent. of Water Blue, and 10 per cent. of tartar preparation, starting at 60° C., boiling up in 20 minutes, and boiling for about three-quarters of an hour.

3. Considerable change. Dyed with 2 per cent. Amaranth as above.

5. No change. Dyed with 7 per cent. of Palatine Chrome Black 6B as above. On Cotton:

1. Much change of color. Dyed with 1.5 per cent. of Malachite Green conc. on a tannin antimony mordant as above.

3. Considerable change. Dyed with 1 per cent. of Direct Black E extra, like Benzopurpurine.

5. No change. Dyed with 8 per cent. of Diamine Black BH as Primuline.

Fastness of Dyed Cotton to Boiling Acid

The sample is mixed with its own weight of white zephyr and its own weight of white cotton, both free from size, and boiled in a 40-fold bath for one hour with 10 per cent. of tartar preparation, rinsed and dried. The results were:

1. Dyeing only slightly paler. Bleeding. Dyed with 2 per cent. of Chloramine Yellow C as above.

3. Dyeing altered little or not at all. Slight bleeding. Dyed with 3 per cent. of Primuline and developed with beta naphthol as above.

5. No change and no bleeding. Dyed with 8 per cent. of Immedial Carbon B as above.

Fastness of Dyed Wool to Boiling Acid

The sample is mixed with zephyr, free from size, and treated for 1 1/2 hours at 90° to 92° C. in a 70-fold bath containing 2.5 grammes of tartar preparation per litre, rinsed and dried. The types are:

1. Dyeing only slightly changed. Bleeding. Dyed with 2 per cent. of Chrome Yellow D, 10 per cent. of Glauber's salt crystals and 3 per cent. of acetic acid, entering at 60° C., bringing to the boil in 15 minutes, boiling half an hour, exhausting with 2 per cent. of sulphuric acid, cooling to 70° C., adding 1.25 per cent. of potassium bichromate, and finally boiling gently for half an hour.

3. Dyeing unchanged. Slight bleeding. Dyed with 2 per cent. of Diamine Scarlet B as above.

5. Dyeing unchanged. No bleeding or very little. Dyed with 6 per cent. of Alizarine Black WX extra paste, 10 per cent. of Glauber's salt crystals, and 5 per cent. acetic acid, starting at 60° C., bringing to the boil in 20 minutes, boiling for half an hour, exhausting with 5 per cent. acetic acid, boiling another 20 minutes, letting cool to 70° C., adding 2 per cent. of bichromate of potash, and finally boiling gently for 40 minutes.

Fastness of the Dyed Cotton to Acid

The sample is dabbed with a 10 per cent. solution of sulphuric acid or with 30 per cent. acetic acid, and the result is compared with a spot merely dabbed with water.

1. Much changed by mineral acid, little by organic acid. Dyed with 3 per cent. of Diamine Scarlet B.

3. Much changed by mineral acid, but not at all by organic acid. Dyed with 0.5 per cent. of Chrysophenine G.

5. No change with either mineral or organic acid. Dyed with 20 per cent. of Indanthrene Blue RS in paste.

Fastness of Dyed Cotton to Bowking

The sample is mixed with its own weight of unbleached and undyed cotton, and treated in two ways:

A. It is bowked for six hours in an overflow pan with 7 1/2 per cent. soda ash, 1/2 per cent. Marseilles soap, and 1 per cent. Ludigol in a five-fold bath.

B. As in A but without Ludigol. Five types were fixed.

1. Color destroyed by treatment A. Dyed with Congo Red.

2. Color nearly destroyed by treatment A. Dyed with Methylene Blue.

3. Color much changed by treatment A, but still serviceable. Dyed with Indigo.

4. Unaffected by treatment A. Dyed with Helindon Orange R.

5. Unaffected by treatment B. Dyed with Turkey-red (old red).

Fastness of Dyed Cotton to Chlorine

The sample is mixed with its own weight of white cotton, free from size, wetted out with hot water, and soaked one hour at about 15° C. in a chloride of lime bath containing one gramme of active chlorine per litre, or in a hypochlorite of sodium bath of the same strength, rinsed, soured, rinsed and dried. The five types are as follows:

1. Hypochlorite of sodium pales the dyed cotton, and there is bleeding on to the white. Dyed on a tannin-antimony mordant with 1 per cent. of Methylene Blue B.

2. Hypochlorite of soda alters the color of the dyed cotton, but there is no bleeding. Bleaching powder alters the color much, but still there is no bleeding. Dyed with 6 per cent. of Indanthrene G powder in a twenty-fold bath of distilled water, containing five times the weight of the dye of caustic soda lye 40° B., and 2 1/2 times that weight of hydrosulphite. Dyeing time half an hour at 60° C., rinsed and dried.

3. Hypochlorite of soda only slightly pales the color of the dyed cotton without bleeding, but bleaching powder makes it much paler, also, however, without bleeding. Dyed with indigo to the same shade as that given by Diamine Fast Blue FFB.

4. Hypochlorite of soda does not affect the dyed cotton, but bleaching powder makes it much paler. In neither case is there any bleeding. Dyed with 10 per cent. of Hydron Blue G, 20 per cent. paste, together with half the weight of the dye of caustic soda lye 40° B, and half that weight of hydrosulphite.

5. No action of any kind with either bleach. Dyed with Turkey Red (old red).

Fastness of Dyed Cotton to Mercerization

The dyed cotton is sewn on to bleached undressed calico, steeped for five minutes in cold caustic soda lye of 30° B, rinsed, soured, rinsed and dried.

1. Color very little affected, and little bleeding. Dyed with 4 per cent. of Primuline, and developed with betanapthol.

3. Color unchanged, and less bleeding. Dyed with 1 per cent. of Chloramine Yellow as above.

5. No change of any kind. Dyed with 8 per cent. Immedial Carbon as in the above cases of the use of this dye.

(To be continued.)

THE SHORTAGE OF DYES IN ENGLAND

BY WILTSHIRE

We may start this article with the statement that there is no shortage of dyes. Certainly some classes of dyestuffs are difficult to obtain or have disappeared from the market entirely. At present we are being forced back to the year 1906, before the vat dyes were put on the market. These and certain chrome dyes are German monopolies, made solely in Germany and when stocks, large in some cases, are exhausted we shall have to do without them. But we might be forced back to the time before the days of Perkin and still there would be no shortage of dyes. We should simply return to the methods of dyeing of our grandfathers and plenty of their work still exists to prove what could be done with the natural coloring matters.

It is obvious that any consideration of what may perhaps be the effect of the war on the world's supply of dyes must be divided at first as regards natural and artificial dyestuffs. In any case the war which is devastating the artificial dye making industry on the European Continent will draw more attention in the sequel to the natural dyes. One of the results of the war may

be to stimulate the cultivation of the dye yielding plants in territories largely under the control of English speaking races.

Lately all the nations with armies to clothe have taken more or less to khaki. This color will serve as an example of the effect of the shortage of certain artificial dyestuffs. The army authorities insist that the dyeings shall pass certain tests; the dyers insist that the necessary qualities shall be obtained in the easiest and most economical manner. The result is that for the last few years khaki has been dyed with one bath chrome yellow. This gives a good result, but not better than that obtained with fustic. On a chrome mordant this involves two baths, but a near enough khaki shade can be got on a copper mordant and in this case the mordant bath will exhaust and can serve as a dye bath. The supply of fustic is not likely to fail and substitutes have quite lately been pointed out. Osage orange has been heralded and it has been discovered that privet contains the identical coloring matter of fustic. Logwood has never been driven out. The logwood preparations that have superseded raspings and chips, have given it a new life of prosperity. Indigo, cutch, Persian berries and the red woods are likely to come in again. The fact of the matter is all the world is in the same boat. The Germans, who are the greatest makers of dyes, have lost access to their export markets for the time being and can make no use of their monopoly of certain colors This being so America and England and the few other countries with their textile industries in going order have to make the best of it and as they are working mainly for the home markets their best at any rate satisfies their customers.

But neither in America nor in England are the dyers driven solely back on natural dyestuffs, nor are they likely to be. The war is sure to decrease the productive capacity of the German dye works. In the meanwhile chemists in other countries have their opportunity and are taking advantage of it. Switzerland is an important color producing country and exports to America via the Mediterranean could not be interfered with. In fact with her control of the sea England may very well receive supplies from this source. Apart also from the vat dyes and certain chrome colors there are supplies from fairly large English works. These firms make all the ordinary classes of dyes, direct cotton colors, acid wool colors, basics, etc. A British alizarine company insures the supply of alizarines. There are smaller English firms, who in consequence of German competition have recently paid more attention to other branches of the business, but are already turning their attention to coal tar colors and are now ready to send out many specialties.

As regards patented colors England enacted some time back that to retain their monopoly they must be manufactured in Great Britain. It has always been suspected that this law is a dead letter, practically unenforced. Certainly some chemical works were started up professedly to manufacture these patented articles, but it is very doubtful whether they ever turned out an ounce of vat color. Much has been written by the lay press concerning the possibilities of a sort of war seizure of German patents. A patent specification, however, is not necessarily the clear exposition of a process. For example a specification giving defendable protection to a vat color might take long and wearisome experiments in plant and material before it could be worked out. A serious attack on German patents in England would require the expenditure of large capital and capital is shy at present, apart from the fact that a cessation of hostilities would lead to a relinquishment of all privileges of war seizure.

The fact remains that the world has to do without certain classes of colors for the time being. Customers are already showing the good horse sense to accept the situation. Goods are passed without the finicking criticism of exact matching to shade that has long been the nightmare of the dyers. War strain brings about the necessity that is the mother of invention. The working recipe book is put by on the dye house shelf and

new methods of getting much the same results are evolved. Some of these will be found worth while working even when we return to the normal. There is no shortage of pasture; we are simply obliged to retire into fresh fields.

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Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

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Recipe No. 110

BLUE ON WORSTED YARN

Alpine Bright Blue R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Alpine Bright Blue R.
(Swiss Colors Co., 15 E. 12th St., New York, N. Y.)
20 lbs. Glauber's Salt. (Crystal.)
5 lbs. Sulphuric Acid.

Enter at 160° F. and dye at a boil for one hour.

Alpine Bright Blue R is an exceptionally bright color and dyes very level. It stands light, milling, and is excellent for brightening and shading alizarine and chrome colors.

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Recipe No. 111

BLUE ON WORSTED YARN

Alpine Paon Blue on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Alpine Paon Blue.
(Swiss Colors Co., 15 E. 12th St., New York, N. Y.)
20 lbs. Glauber's Salt. (Crystal.)
5 lbs. Sulphuric Acid.

Enter at 160° F. and dye at a boil for one hour.

Alpine Paon Blue is an exceptionally bright color and dyes very level. It stands light, milling, and is excellent for brightening and shading alizarine and chrome colors.

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Recipe No. 112

BROWN ON COTTON YARN

Kryogene Brown G R X X on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Kryogene Brown G R X X,
(Badische Co., 86 Federal St., Boston, Mass.)

dissolved with

3 lbs. Sodium Sulphate,

and then add

30 lbs. Common Salt,
5 lbs. Soda Ash.

The bath is boiled and the material entered at this temperature. The steam is then shut off and the dyeing continued for one hour.

After dyeing, the material is evenly and well squeezed, and hung in the air before rinsing.

Kyrogene Brown G R X X possesses good fastness to washing, light, alkali and acid.

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Recipe No. 113

BLACK ON COTTON YARN

Sulphur Black S B C on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Sulphur Black S B C.
(Read Holliday & Sons, 11 Gold St., New York, N. Y.)

Dye in the usual manner for sulphur colors.

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Recipe No. 114

RED ON WORSTED YARN

Lanavoil R on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Lanavoil R.
(Kalle Color and Chem. Co., 530 Canal St., New York, N. Y.)
20 lbs. Glauber's Salt. (Crystal.)
4 lbs. Sulphuric Acid.

Enter at 160° F. and dye at a boil for one hour.

Lanavoil R possesses high coloring power, and gives an excellent shade of bluish red of good fastness.

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Recipe No. 115

GREEN ON COTTON YARN

Sulfur Green 4 G K on 100 lbs. cotton yarn. Prepare the dye bath with

9 lbs. Sulfur Green 4 G K.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
12 lbs. Sodium Sulphide

dissolved together, then add to the dye bath with

5 lbs. Soda Ash,
60 lbs. Glauber's Salt.

Boil up the bath and dye at a temperature just below the boil, keeping the material below the surface of the liquor as much as possible.

Sulfur Green 4 G K produces dyeings fast to light and washing without after treatment.

Recipe No. 116

YELLOW ON WORSTED YARN

Acid Chrome Yellow G L on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Acid Chrome Yellow G L.
(The Bayer Co., 117 Hudson St., New York, N. Y.)
15 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter at 120° F., raise slowly to a boil, boil 3/4 hour, add if necessary acetic formic or sulphuric acid to exhaust, and boil 3/4 hour longer. Then add

1 lb. Potassium Bichromate,

and boil 3/4 hour longer.

Acid Chrome Yellow G L possesses very good fastness to light, alkali, washing, steaming and perspiration.

Recipe No. 117

BROWN ON COTTON YARN

Sulfur Corinth C L B on 100 lbs. cotton yarn. Prepare the dye bath with

9 lbs. Sulfur Corinth C L B.
1½ lbs. Turkey Red Oil.
per 200 gals liquor.
20 lbs. Sodium Sulphide.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
60 lbs. Glauber's Salt. (Crystal.)
per 200 gals liquor.
4 lbs. Soda Ash.
per 200 gals liquor.

First boil up the bath with the necessary quantity of soda ash and sodium sulphide. Stir the dye together with the turkey red oil and a little hot water, and then add to the dye bath and allow to boil for a few minutes. Finally add the Glauber's salt and dye for about one hour at 200° F. After dyeing, wring and age for 1/2 hour before washing.

Sulfur Corinth C L B possesses very good fastness to light and weather.

Recipe No. 118

BLUE ON COTTON YARN

Triazol Pure Blue 3 B on 100 lbs. cotton yarn Prepare the dye bath with

3 lbs. Triazol Pure Blue 3 B.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)
20 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Triazol Pure Blue 3 B is characterized by its brightness for a direct cotton color.

Recipe No. 119

YELLOW ON COTTON YARN

Immedial Yellow B R on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Immedial Yellow B R.
(Cassella Color Co., 182 Front St., New York, N. Y.)
20 lbs. Sodium Sulphide. (Crystal.)
8 lbs. Soda Ash.
40 lbs. Common Salt.

Dye at a temperature just below the boil for one hour, then squeeze, rinse and dry.

Immedial Yellow B R possesses excellent fastness to light, washing, and its fastness to chlorine is particularly good for a sulphur color.

Recipe No. 120

RED ON WORSTED YARN

Lanaviol 2 R on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Lanaviol 2 R.
(Kalle Color and Chem. Co., 530 Canal St., New York, N. Y.)
20 lbs. Glauber's Salt. (Crystal.)
4 lbs. Sulphuric Acid.

Enter at 160° F. and dye at a boil for one hour.

Lanaviol 2 R possesses high coloring power, and gives an excellent shade of bluish red of good fastness.

Recipe No. 121

BLACK ON COTTON YARN

Chrome Black M on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Chrome Black M.
(Read Holliday & Sons, 11 Gold St., New York, N. Y.)
10 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter lukewarm, raise to a boil and dye boiling 1/2 hour. Then add 1/2 pound sulphuric acid, boil 20 to 30 minutes, when the bath should be exhausted. Then add one pound bichrome and boil 1/2 hour. In no case must the bichrome be added until the bath is exhausted or else a brown shade black will be the result.

Chrome Black M possesses remarkable fastness to light, milling, acids and alkalies.

The number of sheep estimated to have been shorn in Australia during the season 1913-14 was 109,000,000 head, including lambs, which produced 7.87 pounds per head, including lambs, as against 7 pounds for the previous season.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Bobbin and Spool Painting Machine. Speed & Stephenson, 170 Summer St., Boston, Mass., are placing on the market machines for painting and shellacing bobbins and spools, which are described in another part of this issue.

Lock-Nut. The American Lock-Nut Co., Pullman Station, Chicago, Ill., has placed on the market a nut which can be locked in position on a bolt so as to be practically immovable until the nut breaks.

Ball Tension for Winding Machines. Henry Meynell & Co., Ltd., Accrington, England, has recently placed on the market a device for maintaining uniform tension on yarn during the winding process. It consists of a steel or glass ball placed in a porcelain cup, one of these being provided for each thread. The ball revolves with the yarn but bears on the bottom of the cup, giving two brake points. The device is in use in Lancashire mills and is said to be giving satisfaction.

Changeable Effects. Rossbach & Krake, Oelnitz, Germany. A method of weaving jacquard patterns showing changeable effects.

Bobbin Cleaner. The Kollnauer Baumwollespinnerei, Kollnau, Baden, Germany. An improved machine for removing waste yarn from bobbins.

Velvet Fabric. The Firma Rodier, Paris, France. A pile fabric in which tufts of varying height are formed from the warp in the same stripe or course.

Aniline Black. Kurt Blitz, Neukirchen, near Crummitschau, Germany. A quick process of dyeing aniline black on cotton in a cold bath.

Piece Dyeing Machine. H. Cochrane, Paisley, Scotland. An improved machine for dyeing all classes of piece goods, which embodies a number of important features, including a large productive capacity.

Cotton Mixing Machine. J. Weinbrenner & Co., Thann, Alsace, Germany. An improved machine for mixing cotton preparatory to spinning.

Tension Device for Winders. Duckett, Morrison & Co., Stalybridge, England. An improved yarn tension device for winding frames. It is working satisfactorily in Lancashire mills.

Selvage Motion. I. Walton, Nelson, Lancashire, England. An attachment for weaving fancy selvages on cotton goods.

Tasselling and Fringing Machine. Collins & Bent, Ltd., Leicester, England, have recently placed on the market an improved machine for making fringes and tassels on scarfs, mufflers, tablecloths and similar goods.

Top Dyeing Machine. Callebaut and De Blicquy, Brussels, Belgium. An improved machine for dyeing worsted tops by the circulating system.

Scroll for Mules. P. Bourcart, Paris, France. A device for operating mule carriages by which a pulley of uniform diameter, but driven at variable speed, takes the place of the ordinary scroll.

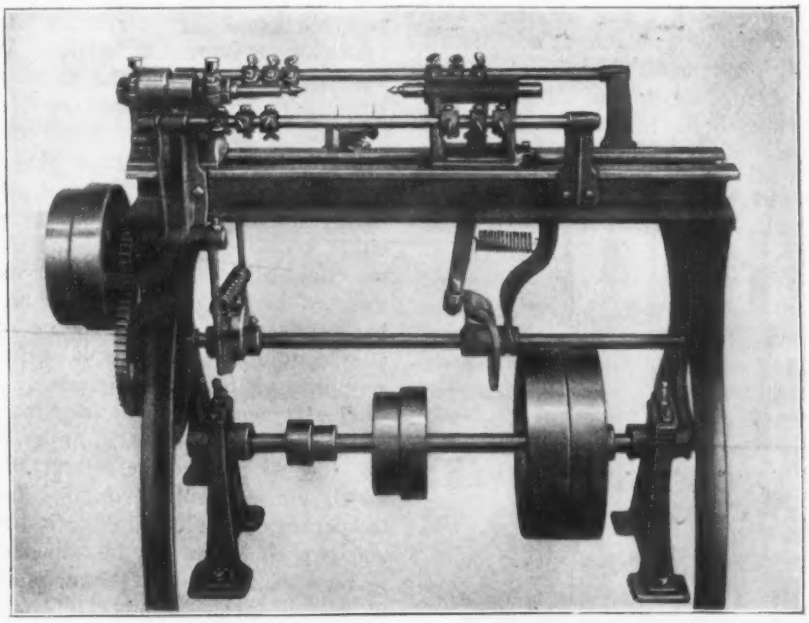
Paper Yarn. Emil Claviez, Adorf, Germany. An attachment to paper yarn machines by which the paper strips are moistened uniformly before being twisted into yarn.

THE J. E. LOCK BOBBIN AND SPOOL PAINTING MACHINE

Every practical man familiar with the spinning of cotton, worsted or woolen yarn realizes the importance of keeping the bobbins and spools in good order. Not only is the life of the spools and bobbins greatly prolonged by good care, but the principal advantage is in the prevention of the waste that is otherwise caused by rough or splintered edges on the wood bobbins or spools. For this reason textile manufacturers will be interested in the bobbin and spool painting and shellacing machine for which Speed & Stephenson, 170 Summer St., Boston, Mass., are the sole manufacturers and selling agents.

These machines have recently been introduced in the United States. The bobbin painting machine will paint the ends of any sized bobbin used on slubbers, speeders, quillers or similar machines. The painting machine can be operated by unskilled help and has a capacity of twenty bobbins per minute, all being painted exactly alike without waste of paint.

The spool shellacing and painting machine shown in the illustration will paint or shellac any ordinary warp speeder or similar spool up to a 12-inch traverse and 5-inch diameter of head. This machine shellacs both heads of the spool at the same time either on the outside only or on both inside and outside at a speed of 16 spools per minute, the work being done in a first-class manner. This machine will also do the work for which the bobbin painting machine is designed at a speed of twenty bobbins per minute.



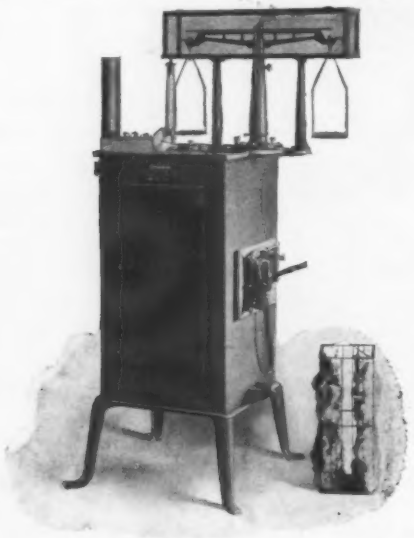
THE LOCK BOBBIN AND SPOOL PAINTING MACHINE

Messrs. Speed & Stephenson state that bobbins can be painted at a cost of 10 cents per thousand as compared with 40 cents per thousand by the old hand method. Plain bobbins can be purchased and a saving of 85 per cent. of the extra cost of painting can be effected by having this work done at the mill on one of these machines. Shellacing or painting an old bobbin or spool makes it as good as new. The spools and bobbins can be painted different colors in order to distinguish different kinds of yarn if desired. For example, one end can be painted black

and the other red at one operation. The painting machine costs less than do three thousand spools and it is believed that it will save twice this number of spools every year. Spinners of cotton, wool and other yarns are invited to correspond with Speed & Stephenson regarding these useful machines.

A NEW ELECTRIC CONDITIONING OVEN WITH SINGLE BASKET

For textile mills having a limited amount of conditioning work a new electric conditioning oven is now available at a moderate expense. It is manufactured by the Emerson Apparatus Company, Boston, Mass., and is a single basket oven, in that it makes one test at a time. It is a complete testing unit,



A NEW ELECTRIC CONDITIONING OVEN WITH A SINGLE BASKET

very easily operated, and may be used in any mill having electric current.

This new single basket oven may be used with either alternate or direct current. The consumption of electricity is very low and costs less than one cent per hour. The electric heater is placed in the bottom of the oven and the heat rises through the oven. The oven shell is double walled and packed with insulating material, so that there is very little loss of heat by radiation.

The circulation of hot air through the oven is obtained by means of natural draft using a chimney of suitable size. The fresh air enters through an opening in the bottom of the oven, circulates around the heater, and then passes into the oven and finally escapes moisture laden from the top of the chimney pipe. A damper in the chimney regulates the amount of draft.

In making conditioning tests it is absolutely essential to have accurate balances. The weighing balances provided in this oven are of the highest grade of analytical type and are usually graduated in the decimal system to facilitate computation. While very sensitive, they are at the same time constructed to withstand hard service and are very easily operated. Anyone of ordinary ability can make weighings. Weights may be taken on both sides of the weighing beam, that is to say, with the basket suspended either outside or inside of the oven. The material before being tested is usually weighed in the atmosphere by hanging the basket on the right side of the scales, and after conditioning, while still in the oven, by supporting it from the left side of the scales.

The temperature of the oven may be regulated either automatically or by hand. In the former case a thermostat is provided which automatically maintains the desired temperature, whereas, in the latter, a rheostat is used which may be adjusted by hand to regulate the amount of current necessary to get the proper temperature. The automatic temperature control is more convenient and entirely eliminates manual attention.

All the valuable features developed by the Emerson Apparatus Company in their larger four basket oven have been retained in this smaller oven. It is quick, accurate and easily operated. This oven will appeal to the many mills in this country who wish to know the amount and variations of moisture in their various products.

Lace manufacture was introduced into Great Britain early in the tenth century, and British guipure or point lace was highly esteemed on the Continent a century or so later.

AN IMPROVED SPOOL

The spool shown in the accompanying illustration, recently patented by Frank Mossberg of the Frank Mossberg Co., Attleboro, Mass., is intended for use in the manufacture of cordage to take the place of

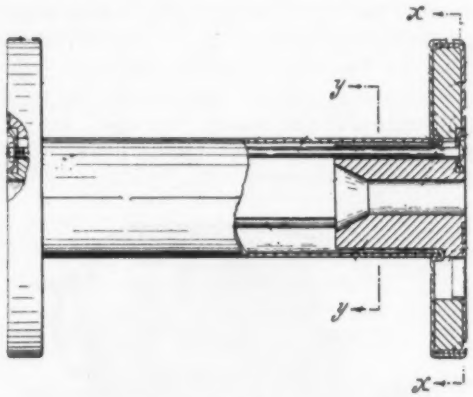


FIG. 1

the ordinary wooden spool. The objects are to provide means of applying a sheathing; to provide an improved means of uniting the heads in conjunction with the end plugs; and to render the bobbin more firm, strong and serviceable. Fig. 1 is a side elevation partially in central longitudinal section of the new spool; Fig. 2, an end elevation of the same; Figs. 3 and 4, sections on lines x x and y y of Fig. 1.

The bobbin comprises a body of thin sheet metal having its contact edges united by solder or riveting. The heads of the bobbin or spool are of similar construction and similarly applied. Each head comprises an annular disk of wood or other material provided with a rectangular counter sunk portion upon this outer face at its central margin. Upon the rear face of the disk, 3, is a metallic plate or disk provided with an annular outwardly directed flange upon its periphery. Near the center of the disk the material is bent to form a flange that impresses the inner margin of the disk. This flange is bent at right angles and then bent outwardly, forming an annular recess in the back of the sheathing of the head in which the end of the barrel is tightly seated. Upon the outer face of the disk is a second metallic disk having an inwardly directed peripheral flange embracing the periphery of the disk and overlapped by the flange, whose outer edge is bent in tight contact with the flange. Near its inner margin the disk is provided with a series of annular openings and around these openings the material is inwardly bent. In each end of the barrel is inserted a plug provided with a conical inner end and having an enlarged end portion forming an annular shoulder. At intervals in the front end portion of the plug are rectangular depressions registering with the depressions of the disk.

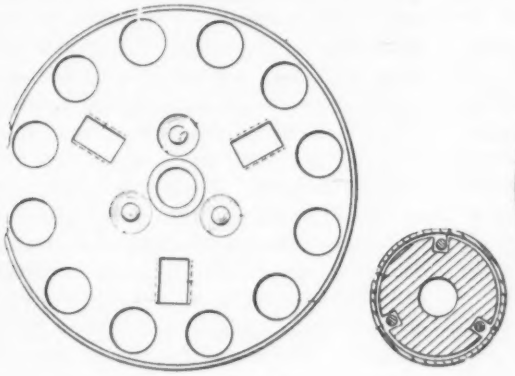


FIG. 2

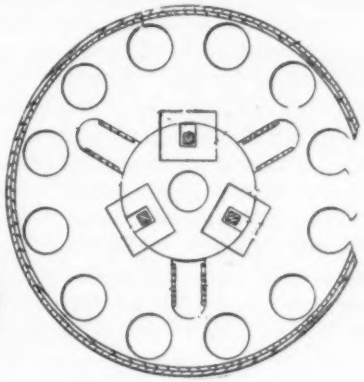


FIG. 3

The two heads of the bobbins are connected by bolts extending through the openings and whose heads and nuts are within the planes of the disks because of the depressed portions and the corresponding depressions already mentioned. These bolts

tightly force the ends of the barrel into their seats in the heads, and the flanges are held snugly in contact with the inner surface of the barrel by the plugs. The bolts pass through longitudinal channels in the plugs.

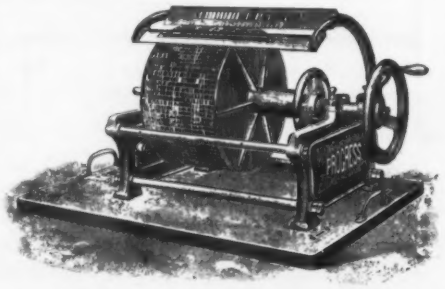
At intervals the disk is provided with radial openings and into these openings are bent lips formed by slitting the metal of the disk in a T shape and inwardly bending the slit margins of the metal. These lips form a lining for the openings into which openings are adapted to enter the lugs upon the base of the driving spindle.

COLOR COMBINATIONS BY MACHINERY

From Oesterreich's Wollen und Leinen Industrie

Various methods are employed for obtaining new color patterns for woven fabrics. Large establishments have separate departments where the patterns are woven on small looms to suit the fancy and taste of the designer or weaver, the colors being changed from time to time in both warp and filling during the weaving of a pattern warp. In this way the mill obtains a few suitable patterns and a large number that are useless. In small weaving mills patterns are often copied directly and new ones are made by changing the color of the filling on old warps, the result being merely variations of old designs. A more systematic method consists in painting the colored patterns on paper by means of stencil plates, or by sketching the patterns with colored chalk on design paper. This drafting method is to be preferred to the expensive method of making patterns in the loom. Recently, however, the apparatus, shown in the accompanying illustration, has been invented by G. Mark, manager of the Oberlausitz Weaving School, in Saxony, and is now being manufactured by the Zittauer Maschinenfabrik und Eisengiesserei, Zittau, Germany. It greatly simplifies the work of obtaining color patterns and makes it possible for the mill to weave only such designs as are wanted.

As shown in the illustration, about four hundred circular discs are mounted on a shaft, each disc being 40 inches in diameter and 1/5 inch thick. The circumference of each disc is divided by grooves into 100 sections, each showing a different color, the shades varying from jet black to the brightest mode shades. The colors are shown in the same order on a metal plate fixed at an oblique angle above the discs and graduated with a scale. Fixed close to the disc is a second plate in which an observation slit is cut. The discs are loose on the shaft. After the discs have been adjusted so as to show the desired color combination in the observation slip, they are fastened to the shaft by turning a wheel. If, for example, the first stripe consists of one



AN APPARATUS FOR OBTAINING COLOR PATTERNS

inch of red, five discs are set at the red section. The pattern is completed in this way according to the desired combination. The shaft and discs are now revolved by hand, bringing the same pattern, but with ninety-nine other color combinations into view, and enabling the designer to make selections of any one desired. The filling patterns can be made in the same way. Three hundred and fifty discs and one hundred sections on each disc give 35,000 color sections for producing the patterns. The machine is built of aluminum bronze and is believed to be a very valuable device for the fancy weaving industry.

In the fiscal year 1909 the exports of knit goods from the United States amounted to $1,016,325, of which $430,773 went to England, $98,103 to Canada, $50,001 to the British West Indies, $29,539 to Hong Kong, $65,451 to Australia, $25,578 to British South Africa, and small quantities to the less important of the British dominions.

Personals

George H. Hughes, superintendent of the Arkwright Mill, Fall River, Mass., has resigned his position with that company.

Richard H. Fish has accepted the position of superintendent of the Arkwright Mill, Fall River, Mass. He was formerly assistant superintendent at the Durfee Mill, same city.

William E. Chamberlin has accepted the position of overseer of finishing at the Esmond Mill. Esmond, R. I. He was formerly employed at the Ray Mill, American Woolen Co., Franklin, Mass.

F. P. Chapman, president of the Franklin Yarn Co., Franklin, Mass., has announced his candidacy for the Senatorship in the Second Norfolk district. Mr. Chapman has had an experience of two years in the House representing that district.

Frank Morris has accepted the position of overseer of weaving at the Mianus Manufacturing Co., Norwalk, Conn.

Edwin Hoyle has been transferred from the Musketaquid Mill to the Silesia Mill at North Chelmsford, Mass. He has been appointed assistant agent.

William Ryder, Jr., has accepted a position as overseer of finishing at the Richardson, Foster Co., Central Falls, R. I., to succeed John Lenahan.

Hugh B. Fraser has accepted the position of overseer of wet finishing in the No. 4 Mill of the National & Providence Worsted Co., Providence, R. I.

John F. Fay has been appointed master mechanic at the Roxbury Carpet Co., Roxbury, Mass. He was formerly employed at Central Falls, R. I.

Michael J. Scully, for the past twenty-five years overseer of ring spinning at the Rockdale Mill, Paul Whitin Manufacturing Co., Northbridge, Mass., has severed his connection with that company.

W. P. Hunt has resigned as superintendent of the Magnolia Mill, Charlotte, N. C., to become superintendent of the Fulton Cotton Mill, Athens, Ga.

Frank A. Upton, superintendent of the No. 6 Mill of the Renfrew Manufacturing Co. at Adams, Mass., has resigned his position with that company to accept a position with Raynes & Co., mill engineers of Boston, Mass.

John H. Vernon, formerly overseer of weaving at the Narragansett Mill, Falll River, Mass., has resigned to accept a similar position with the Weetamoe Mill, same city.

Abraham Hitchon, overseer of weaving at the Weetamoe Mill, Fall River, Mass., has resigned his position with that company.

Henry Grinnell, chief clerk at the Chace Mill, Fall River, Mass., has been appointed assistant treasurer of the company.

Edward Farrell, designer for the River Spinning Co., Woonsocket, R. I., for the past three years, has been added to the office force of the Fall River Iron Works Co., Fall River, Mass

T. E. McCarthy has accepted the position of overseer of finishing at the Darling Woolen Mill Co., Holliston, Mass. He comes from Dayville, Conn.

James W. Williams has accepted the position of overseer of carding at the Somerset Woolen Co., Raritan, N. J. He comes from Adams, Mass.

Wilfred Hamel has been appointed chief engineer at the Royal Mill, B. B. & R. Knight, Riverpoint, R. I. He will have the supervision of the engine and boiler rooms at that plant.

Peter Boyle, who has been fireman at the Valley Queen Mill, B. B. & R. Knight, Riverpoint, R. I., has been appointed engineer.

Clarence Hanson, pay master at the Lewiston Bleachery & Dye Works, Lewiston, Me., for over forty years, has resigned his position with that company. He was a guest of honor at a banquet held at the rooms of the Lewiston Chamber of Commerce, given by agent D. M. Bates, the office employes, foremen and second hands of the mill.

David Anderson, of Woonsocket, R. I., overseer of the cloth, finishing, packing, folding and shipping departments at the Manville Co. of Manville, R. I., is on a business trip to Norfolk, Va.

James Horsfall has reentered the employ of the Squamlake Woolen Co., Ashland, N. H., as overseer of dyeing.

George E. Elliott, for the past two years overseer of ring spinning at the Androscoggin Mill, Lewiston, Me., has resigned his position with that company. The employes in the ring spinning department presented him with a gold watch and a box of cigars, the presentation speech being made by Robert Viollette.

Henry C. Patenaude, general second hand of weaving at the Social Mill, Woonsocket, R. I., has resigned to accept the position of overseer of weaving at the Danielson Cotton Co., Danielson, Conn.

Joseph Phelan, for several years overseer of the cloth department at the Border City Mill No. 2, Fall River, Mass., has resigned his position with that company. He was presented with a beautiful gold watch fob by the help of his department, on his retirement.

M. E. Stevens has resigned as superintendent of the LaGrange Cotton Mills, LaGrange, Ga.

C. W. Rhodes has resigned as superintendent of the Cherryville Manufacturing Co., Cherryville, N. C.

Robert F. Patterson, for about thirty years employed at the Bigelow Carpet Co. of Clinton, Mass., most of the time as superintendent of the weaving department, has tendered his resignation.

John Jones has reentered the employ of the Allen Woolen Mills, Rochester, N. Y., as overseer of carding. He formerly held this position.

Joseph Tattersall, Jr., has resigned his position as head designer at the Lancaster Mill, Clinton, Mass. Hans A. Becker, his former assistant, has succeeded him.

John Morrow, who has been assistant finisher under his father for eight years at Millville, N. J., has resigned to accept the position of overseer of finishing at the Eddystone Print Works, Eddystone, Pa.

Elwood Ward has accepted the position of overseer of weaving at the Bridgewater Woolen Co., Bridgewater, Vt. He was formerly employed at the H. W. Johns-Manville Co., Finderne, N. J.

Abraham Woodhead has accepted the position of overseer of carding at the Belknap Mills Corporation, Laconia, N. H.

Charles Fralick, overseer of carding at the Belknap Mills Corporation, Laconia, N. H., has resigned his position with that company.

William Allan has accepted the position of overseer of spinning at the A. D. Gleason Mill, Gleasondale, Mass.

Albert Hudson has accepted the position of overseer of carding and combing at the Cleveland Worsted Co., Falconer, N. Y. He comes from South Barre, Mass.

G. M. Brewer has accepted the position of overseer of weaving at the Glendale Mill, Eufaula, Ala.

T. C. Wilson has been appointed superintendent of the Magnolia Mill, Charlotte, N. C.

C. O. Edwards has accepted the position of overseer of weaving at the Eva Jane Mills, Sylacauga, Ala.

G. A. Lay has been promoted from overseer of carding and spinning to superintendent of the Capitola Manufacturing Co., Marshall, N. C., to succeed B. W. Bingham.

Daniel Reville has accepted the position as overseer of carding at the Bellwill Mill, Wilmington, N. C.

W. F. Smith has accepted the position of overseer of spinning at the Porterdale Mills, Porterdale, Ga.

T. A. Drake has accepted the position of overseer of spinning and twisting at the Aldora Mills, Barnesville, Ga. He was formerly employed at the Piedmont Mill, Egan, Ga.

W. R. Atherton, superintendent of the Jonesboro Yarn Mill, Jonesboro, Tenn., has resigned and is succeeded by E. D. Brown of Hickory, N. C.

Andrew Archer has accepted the position of overseer of weaving at the Sonnhill Worsted Co., Elmville, Conn. He was formerly employed at the Ray Mill, American Woolen Co., Franklin, Mass.

Cornelius Hamill, overseer of weaving at the Sonnhill Worsted Co., Elmville, Conn., has resigned his position with that company.

Nathan E. Beddall has been elected president of the Superior Knitting Co., Port Carbon, Pa., to succeed H. L. Miller.

A. W. Couper has been appointed agent of the Lancaster Mill, Clinton, Mass.

Moses L. Shuttleworth, agent of the Washington Mill, American Woolen Co., Lawrence, Mass., has been elected a director of the Ayer Mill, at Lawrence, to succeed the late Hon. Francis W. Kittredge.

C. P. Learned, for the past two years agent of the Ray Mill, American Woolen Co., Franklin, Mass., has resigned his position with that company.

Arthur L. Snow has been appointed general superintendent of the Lancaster Mill, Clinton, Mass.

F. W. Sturgis, purchasing agent with the Ludlow Manufacturing Associates, Ludlow, Mass., has severed his connection with that company after twenty-seven years of service.

Joseph Cheetham has accepted the position of assistant superintendent of the Durfee Mill, Fall River, Mass., to succeed Richard H. Fish.

J. W. Cooper, superintendent of the New Bedford Cotton Mill, New Bedford, Mass., has resigned to accept a position as cotton expert for the government.

Henry Wylde, for thirty years connected with the Pacific Mill, Lawrence, Mass., and fifteen years superintendent of the print works, has severed his connection with that company.

Goddard Carlson has been appointed overseer of spinning at the Bay State Mill, American Woolen Co., Lowell, Mass. He was formerly employed there as second hand.

James H. Bragg, overseer of carding at the Franklin Yarn Co., Franklin, Mass., has resigned his position with that company.

George Fraser has accepted the position of overseer of carding at the Adams Woolen Co. Adams, Mass. He was formerly employed at the Glen Woolen Mill, Norwich, Conn.

John H. Crowther has accepted the position of overseer of carding at the Franklin Yarn Co., Franklin, Mass. He was formerly employed at the Ray Mill, American Woolen Co., at the same place.

Thomas H. Allshaw has accepted the position of overseer of mule and ring spinning at the Ballou Mill of the Attawaugan Co., Ballouville,

Conn. He was formerly employed at the Tremont & Suffolk Mill, Lowell, Mass.

Fred Arpin has accepted the position of overseer of spinning at the Darling Woolen Mill Co., Holliston, Mass. He was formerly employed at J. Broadbent & Sons' Mill, Unionville, Conn.

George Irons has accepted the position of overseer of weaving nights at the Waterman Worsted Co., Putnam, Conn. He was formerly employed at the Somerset Woolen Co., Raritan, N. J.

Benjamin Woodsone, overseer of the carding department at the New Bedford Cotton Mill, New Bedford, Mass., has been promoted to the position of superintendent to succeed J. W. Cooper.

F. L. Macy has been appointed overseer of carding at the New Bedford Cotton Mill, New Bedford, Mass.

Harry E. Fisher has accepted the position of second hand in the card room for John K. Stewart & Sons, Amsterdam, N. Y.

John Baugh, Jr., has been appointed superintendent of the LaGrange Mills, LaGrange, Ga., to succeed M. E. Stevens.

F. O. Thomas has been appointed superintendent of the Bettie Francis Cotton Mills, Alexander City, Ala.

Giles A. Lay has been promoted from overseer of carding and spinning to superintendent of the Capitola Manufacturing Co., Marshall, N. C.

A. H. Sloan has accepted the position of overseer of carding at the Fidelity Mill, Charlotte, N. C.

B. W. Bingham, superintendent of the Capitola Manufacturing Co., Marshall, N. C., has resigned.

E. E. Davis has accepted the position of overseer of weaving at the Putnam Mills and Power Co., Eatonton, Ga.

A. B. Smith has accepted the position of overseer of weaving at the King Mill, Augusta, Ga.

Thomas R. Morton has been appointed superintendent of the Edenton Mills, Edenton, N. C. He was formerly employed as overseer of spinning and winding at the Kinston Cotton Mills, Kinston, N. C.

J. J. Bullock has accepted the position of overseer of the cloth room at the Selma Manufacturing Co., Selma, Ala. He was formerly employed at the Magnolia Cotton Mills, Inc., Magnolia, Miss.

Thomas Sampson, agent of the Forest Mill, American Woolen Co., Bridgton, Me., has been transferred to the position of agent of the Ray Mill, American Woolen Co., Franklin, Mass.

M. J. Pierce, agent of the Bay State Mill, American Woolen Co., Lowell, Mass., has severed his connection with that company.

F. G. Thomas has accepted the position of agent of the Bay State Mill, American Woolen Co., Lowell, Mass. He was formerly employed at the Cocheco Woolen Manufacturing Co., East Rochester, N. H., and was at one time agent of the Bay State Mill.

Angus Garrett has been appointed superintendent of the New England Knitting Co., Winsted, Conn., to succeed the late Edwin Hitchcock.

Sidney H. Little, superintendent of the Waucantuck Mills, Uxbridge, Mass., has severed his connection with that company.

William Hinchliffe has been appointed superintendent of the Waucantuck Mills, Uxbridge, Mass. He comes from Peace Dale, R. I.

David Welsh has been appointed superintendent of the Paragon Worsted Co., Providence, R. I. He was formerly employed at the Fidelity Finishing Works, Philadelphia, Pa.

Edward E. Magner has resigned his position as overseer of dyeing at the Cobourg Dyeing Co., Ltd., Cobourg, Ont., Canada.

Charles Fralick has accepted the position of overseer of carding at the Newport Woolen Co., Newport, Me. He was formerly employed at the Darling Manufacturing Co., at Holden, Mass.

Edward J. Barry has accepted the position of overseer of weaving at the Salmon Falls Manufacturing Co., Salmon Falls, N. H. He was formerly employed at the Jackson Co., Nashua, N. H.

Everett E. Avery, for the past ten years master mechanic at the Whitinsville Cotton Mill, Whitinsville, Mass., has resigned his position with that company to enter into the roller covering business at Saundersville, Mass. He is succeeded as master mechanic by Fred Hathaway, who comes from New Bedford, Mass.

Clifford J. Alspaugh has been appointed general superintendent of the finishing department at the American Thread Co., Willimantic, Conn.

George E. Walls has accepted the position of overseer of carding at the Nockege Mill, Fitchburg, Mass., to succeed Frank Luck.

Albert A. Booyne, second hand in the weaving department at the Nashawena Mill, New Bedford, Mass., has been appointed overseer of weaving and designer at the Corr Manufacturing Co, Taunton, Mass.

Harry Carr has been appointed overseer of spinning at the Shove Mill, Fall River, Mass. He was formerly with the Richard Borden Mill of the same city and also held a position with the Corr Manufacturing Co. at Taunton, Mass.

F. O. Thomas has been appointed superintendent of the Bettie Francis Cotton Mills, Alexander City, Ala.

J. H. Ables has accepted the position of assistant superintendent of the Alexander City Cotton Mills, Alexander City, Ala. He was formerly employed at the Mandeville Mills, Carrollton, Ga.

J. P. Couch has accepted the position of overseer of weaving at the Augusta Factory, Augusta, Ga.

DEATHS.

C. S. Dodge, of Lowell, Mass., manufacturer of the latest improved rag and shoddy picker, died at his residence, 269 Westford St., on August 22. Mr. Dodge has been closely associated with the woolen and shoddy mills for the past thirty-five years and his machines are widely known throughout the country. Starting business in 1880 in a small way the business has grown to be a large establishment of which he was the sole owner. He took an active part until the time of his death. He was taken ill at his factory on August 18 with acute indigestion from which he died August 22. He was 72 years of age, and leaves one son, Charles P., who has been associated with his father since the business was started and who will continue the business under his father's name.

Isaac E. Palmer, president of the I. E. Palmer Co., Middletown, Conn., died at the age of 78 years. Mr. Palmer had been in business for a number of years and organized the Arawanna Mills, manufacturing hammocks and other cotton goods. He is survived by his wife, one son and a daughter.

George W. Lewis, general manager of the Westport Manufacturing Co., Westport, Mass., died at the age of 87 years as the result of a shock. He had been connected with the Westport Manufacturing Co. for a number of years.

Charles T. Atherton died at his home in Providence, R. I., at the age of 50 years. He was at one time connected with the Atherton Machine Co. of Lowell, Mass., and the Potter & Atherton Machine Co. of Pawtucket, R. I. Mr. Atherton was born in Lowell and received his early education in that city. He is survived by his wife and six children.

Edward S. Bradford died at Hotel Campbell, Springfield, Mass., September 2. He was born in Providence, R. I., in 1842. After receiving a common school education, he engaged in the woolen business and afterwards purchased an interest in the business of Samuel Slater & Co.'s Woolen Mill at Webster, Mass. He was at one time a member of the Springfield Common Council and afterwards elected Mayor of that city. One son and a daughter survive him.

Albert E. Henry, of Pawtucket, R. I., died at his home in that city from the effect of a shot he fired with the intention to commit suicide. He was 43 years of age and for a number of years was superintendent of the Sulloway Mills at Westerly, R. I., and later operated a textile plant of his own in that city. Of late years he had been traveling salesman for a jewelry firm.

Max Lowenthal, senior partner of Max Lowenthal & Sons, manufacturers of mittens, sweaters and infants' vests, with mill at Rochester, N. Y., died at his home in that city at the age of 71 years. He is survived by a wife and eight children.

Thomas A. Hall, a retired cotton manufacturer and at one time member of the State Senate of Rhode Island, died at his home at Pawtucket, R. I. He was born in Exeter, N. H., in 1828 and received his early education in the public schools of that city, also at Washington Academy. Leaving school at the age of 15, he was employed at the cotton mill operated by his father at Hallville, Conn. This mill was burned in 1871. His wife and two sons survive him.

Ethan Edward Allen, a resident of Pascoag, R. I., and for a number of years overseer of woolen and worsted finishing, died at the home of his brother, Owen S. Allen, at the age of 66 years. He was born in Woonsocket, R. I., and was employed in a number of large woolen mills in that state. He is survived by two brothers, Owen S. and Benjamin S. Allen, also one sister, Mrs. Mary Campbell of Woonsocket.

George Dover, for a number of years employed as an overseer at the Atlantic Mill, Providence, R. I., died at his home in that city. He was a member of the Lodge I. O. O. F.

John E. Townsend, who owned and operated a blanket mill at Milton Mills, N. H., died at his home in that town on September 8. He is survived by his wife, one son and a daughter.

William Nuttall died at his home in Philadelphia, Pa. Mr. Nuttall was for a number of years overseer of weaving at the Campbell Mills of that city. He was a soldier of the late war of the rebellion and a member of G. A. R. Post No. 15.

Julian Von Kuczkowski, superintendent of the Muller Gloria Mills, Norwalk, Conn., died in that city at the age of 54 years. It is reported that through despondency over the loss of his wife he committed suicide by shooting. For a number of years he had been associated with Mr. Fuller who operated the mill.

Benjamin B. Curtis, president of the Anchor Webbing Company, Woonsocket, R. I., who was drowned in Gushees Pond at Raynhan, Mass., was buried from his home in Woonsocket on September 13. Interment was at the Melrose Cemetery at Brockton, Mass. He was a member of the G. A. R., Webster Post 13. The flag of the union draped over the casket recalled the gallant service of the deceased for his country during the Civil War. Mr. Curtis was highly esteemed by all who knew him.

John C. Smith, overseer for a number of years at the Amoskeag Manufacturing Co., Manchester, N. H., who severed his connection with that company some time ago on account of his advanced age, died at his home in Manchester at the age of 84 years. He was a native of Southbridge, Mass., and is survived by his wife, two sons and a daughter.

Charles V. Cheney, for thirty-five years employed at the Amoskeag Manufacturing Co., Manchester, N. H., died at his home in that city September 14 at the age of 72 years. His last position with the company was that of master mechanic. A widow and one daughter survive him.

New Publications

Any work noticed under this heading can be obtained, postage or express charges free, by sending the price listed to Lord & Nagle Company, 144 Congress St., Boston, Mass. A catalogue of textile books in the English language will be sent free on application.

Textile Tables; 48 pages. 5 by 8; The United States Conditioning & Testing Co., New York. Price 25 cents.

This is the third edition of a collection of tables for use in the textile trade. It includes tables of English, metric, Japanese, Chinese and other foreign weights and measures, a list of conversion factors for reducing weights and measures from one basis to another, definitions of scientific terms, table of money equivalents, a chapter on the principles of yarn numbering, comparative yarn tables ranging from 1 to 600 cotton size and giving respective equivalents by various systems, comparative table based on the grain weight of 120 yards, table of equivalents of drams and deniers, yards per pound for different denier counts, tables of yarn diameters, tables of thermometric equivalents and the density of liquids. There is a section on humidity, conditioning and regain with a thermometric table, and tables of cotton, worsted and silk regain. The pamphlet will be found very useful by textile manufacturers and traders generally.

BUSINESS LITERATURE

Power Transmission Machinery; The Hill Clutch Co., Cleveland, O.

This is a 224-page catalogue bound in substantial style. It contains detailed descriptions of the various power transmission appliances manufactured by the Hill Clutch Co., their products including friction, clutches, bearings, belt appliances, couplings, gears, pulleys, shafting and a great variety of other appliances required in transmitting power. Some idea of the great extent of their line can be formed from the fact that the illustrated descriptions in this catalogue fill 224 pages, each 6 by 9 inches.

Root Counters; The C. J. Root Co., Bristol, Conn.

The value of reliable counting machines is becoming more clearly appreciated, not only in the textile trades, but in many other lines of business. This fact is brought out plainly in a pamphlet issued by the C. J. Root Co., manufacturers of the well known Root counters. In addition to a description of the Root counter it contains illustrations of a number of different applications of the machine. These include its use on printing machines, stamping presses and machines in textile mills, including spoolers, beaming machines and looms. The counter is shown attached to the take-up roll of a Crompton & Knowles loom which can be connected with the cam shaft to count picks if desired.

Fans; The L. J. Wing Mfg. Co., New York.

An illustrated catalogue describing the many advantages of the Wing disc fan. Included in this catalogue are dimension tables, capacity and power tables of Wing disc fans, interesting adaptations showing two installations of the disc fan. One of the illustrations shows a 54-inch Wing fan exhausting air from the gas producer room in the basement, seven floors below.

Industrial Notes

LATCH NEEDLES

E. W. S. Jasper, president of the Continental Latch Needle Co., states that he has received news from the needle factory at Ebingen, Germany, to the effect that although many of their men have been called to the front, they are running about normally and can accept orders, which are subject to only such delays as may be occasioned by lack of transportation facilities. Shipments are beginning to come through from neutral ports of Rotterdam, Copenhagen and Genoa. While this service is but a poor substitute for the normal movement of German ships in time of peace, conditions will be materially improved over what was experienced in August and September when nothing came through. When the war broke out the Continental Latch Needle Co. fortunately had a very large stock on hand, with which they have been able to take care of practically all their customers. They have still a considerable stock, which will be replenished to some extent by several large cases of latch needles at present on the water. Further shipments are expected at regular intervals.

Adolf Groz, vice-president of the Continental Latch Needle Co. and managing director of the factories in Germany, who visited this country in June and July last, is now at the front together with a large number of men from the Ebingen, Bitz and Messstetten factories. This means loss of production, but German trade with the nations at war being at a standstill, there remains quite enough help to fill orders from neutral countries, including America. Customers of the Continental Latch Needle Co. are asked to place their orders as far in advance as possible, as some delay is inevitable.

SOME DYESTUFFS REACH PORT

The Cassella Color Co. announces the receipt of the first shipment of dyestuffs exported from Germany since the beginning of the war, which arrived on the "Rotterdam" September 7th. Three hundred thirty packages were consigned to them. As an indication of the disturbed condition of international commerce, it is stated that no invoice had arrived and the character of the shipment could not be determined until laboratory tests had been made of the contents of each package.

THE SOUTHERN NEW ENGLAND TEXTILE CLUB

The October meeting, dinner and outing of the Southern New England Textile Club, which was held at the Pomham Club, Providence River, on Saturday, September 19th, was a most successful and pleasant affair. The absence of any routine business and formality seemed to give a greater incentive to sociability and offered many opportunities of getting closer together. The secretary reported the attendance as 287, but the facilities of this well known hostelry were well able to cope with the demand made on it.

A most appetizing lunch was served at 12 o'clock and the usual magnificent Polham shore dinner was enjoyed later in the day. The different textile localities of New England were well represented and many opportunities were given for renewing old acquaintances and making new ones. F. L. Chase, the able secretary, was everywhere doing what he could for the comfort of the guests while Henry C. Dexter, the popular president, was kept busy receiving congratulations from his many friends on his safe return from an extended trip to Mexico, California, Colorado and other Western states.

This association is doing a great work in cultivating and improving the social fellowship of its members and is bound to be the means of increasing friendships and confidence in business affairs.

DUBIED MACHINERY CO.

One of the few importing houses who are still in a position to accept import orders for reasonable deliveries in knitting machines is the Dubied Machinery Company (E. O. Spindler), 350 Broadway, New York, N. Y., who represent Edward Dubied & Co., Couvet, Switzerland. Their factory being located in Switzerland is less crippled through the European disturbances than factories in the countries of the belligerents.

Mr. Spindler further states that he has at the present time a considerable and well assorted stock of power and hand knitting machines in his New York warehouse, which enables him to supply the wants of the sweater, necktie, etc., manufacturing trade for some months to come.

THE GOULDS MANUFACTURING CO.

Announcement has just been made of the appointment of A. H. Whiteside as vice president and general sales manager of the Goulds Manufacturing Company of Seneca Falls, N. Y., manufacturers of hand, triplex and centrifugal pumps. Mr. Whiteside is well known in the machinery and allied trades. During the past fifteen years he has been connected with the Sterling Boiler Co. as Southern manager, with the Westinghouse Electric and Manufacturing Company as their Baltimore representative and with the Allis Chalmers Company as manager of their power and electric department. In the latter capacity he had charge of all their pumping engine and centrifugal pump business. Mr. Whiteside succeeds W. E. Davis, who has been obliged to give up some of his active duties due to injuries sustained several months ago.

DYEING MACHINE PATENTS

We are advised by the Klauder-Weldon Dyeing Machine Co. that in the actions brought in the Supreme Court of the State of New York by them against the executors of Leonard A. Weldon and John H. Giles to compel the assignment of U. S. Letters Patents Nos. 645698 and 659906, of which the Klauder-Weldon Dyeing Machine Company claimed ownership, the Court has just rendered a decision in favor of the Klauder-Weldon Dyeing Machine Company.

The controversy arose by reason of the fact that in 1893 Leonard A. Weldon agreed to assign all of his patents, applications for patents and future inventions to the Klauder-Weldon Dyeing Machine Company. The two patents in question, however, although the inventions covered by them were embodied in the Company's machines and were always treated as the property of the company, were not formally assigned to the company by Leonard A. Weldon prior to his death in 1901. The Company, however, continued to exercise all rights of ownership in the patents until 1913, when the executors of Leonard A. Weldon asserted ownership and assigned one of the patents to John H. Giles. An injunction was obtained to prevent the assignment of the other patent pending the determination of the suits, and the present decision of the Court upholds the contention of the plaintiff that the assignment by Leonard A. Weldon in 1893 covered the inventions in question and that the patents are the property of the Klauder-Weldon Dyeing Machine Company.

ALFRED SUTER

We are informed by Mr. Suter that he is manufacturing some machines in this country to fill orders given before the war. He is getting shipments from Europe, among them being invoices of schappe yarns made by the Filature Lyonnaise de Schappe, J. Villard & Co., Lyons, France, who have made arrangements to fill all orders received from their American customers. Mr. Suter reports a very brisk business in all grades of schappe yarn. He has also received recently a number of finishing machines and testing installations from Europe and reports having taken several large orders from domestic mills.

FULL FASHIONED KNITTING MACHINERY

Wolfgang Richter, proprietor of the Domestic Machine Works, Vankirk and Erdrick Sts., Wissinoming, Philadelphia, announces to the full fashioned trade that he is ready to make repairs and change full fashioned knitting machines from the coarsest gauges to the finest. The works are also ready to build new "American" built full fashion machines, rigged up to do anything in this line from a knocking over bit to a finished cotton frame.

THE HESS-BRIGHT MFG. CO.

The following notice has been sent to the trade:

Dear Sir:—When, on the first of August, communication with our Berlin factory was interrupted, we had approximately one-half million bearings in stock. With the exception of a few sizes in which a shortage was caused by an unusually heavy demand, our stock was well balanced and large enough to supply the demands of our regular customers for several months.

Upon learning that we could not depend upon our usual source of supply, we took steps to provide bearings in those sizes where shortages occurred. As our manufacturing facilities were inadequate we deemed it advisable to have a portion of the work done by outside parties rather than seriously delay and inconvenience our customers, to whom we feel morally obligated even though we have been much handicapped by conditions over which we have no control.

Rings in various stages of completion (which will be finished in our own factory) and in some cases complete bearings, particularly thrusts, are being made for us. In all cases this work is being done in accordance with our specifications and must pass the same rigid inspection to which all our imported bearings are subjected. All bearings sold by us are subject to our usual guarantee covering defects of workmanship or material developed within one year.

Our own manufacturing facilities are being increased as rapidly as is consistent with the production of first quality bearings. Our experience as ball bearing manufacturers covers a period of over nine years, and thousands of bearings made in our factory are giving most satisfactory service.

Although bearings are now being shipped to us from Berlin, we are proceeding on the entirely independent basis of manufacturing here.

Many of our customers have expressed their approval of our decision to manufacture in this country and have in other ways shown a spirit of cooperation and loyalty in the present rather trying situation, which is most gratifying and highly appreciated.

Very truly yours,
The Hess-Bright Mfg. Co.

CARLOAD LOTS

The accompanying illustration shows a carload of Rice's Mill White recently shipped to the Northwestern Knitting Mills, makers of "Munsingwear," Minneapolis, Minn. This is one of several carload orders that have recently been filled and one of their staff took advantage of the opportunity to get a picture of it. There does not seem to be any slacking up in the movement of Rice's Mill White to the manufacturing plants of the country and carload lots are no uncommon shipments.

A CARLOAD OF RICE'S MILL WHITE

THE RODNEY HUNT MACHINES

The Rodney Hunt Machine Co., Orange, Mass., has just completed a shipment of five more of the latest model dyeing machines, motor driven, to the new plant of the Dunn Worsted Mills, Woonsocket, R. I. These five machines are to be added to their equipment of five Rodney Hunt motor-driven dyeing machines. Many mills are appreciating the many superior features of the Rodney Hunt machines, for they are readily adapted for motor driving, belt or sprocket chain, as conditions require. These machines are likewise becoming universally used for all processes of bleaching roll and string goods.

MOVING TO LARGER QUARTERS

The Champlain Silk Mills announce the removal of their general offices on September 14th from 500 Driggs Ave., Brooklyn, N. Y., to 377 Fourth Ave., New York City. Their New York sales office, which has hitherto been at 38 East 25th St., is removed to the new quarters. This change is made because the growth of the business demands it and will enable them to keep in closer touch and give better service to their customers.

UNFAIR COMPETITION

A decree has recently been issued by Judge Hand in the United States Court which marks a new step in rulings on unfair competition, especially in connection with trademarked articles. Some dealers have made a practice of advertising a well known trademark brand but only carrying an extremely small stock of the goods in sizes or assortments which do not meet the average buyer's requirements and then selling imitation merchandise to the customers thus lured into the store.

In the case brought by the B. V. D. Co. against Lucien J. Freud, the Court ordered the latter not to engage in such acts of unfair competition against the merchandise of the B. V. D. Co., to refrain from substituting for the B. V. D. underwear, underwear of other makes when the B. V. D. underwear is called for by customers, and from advertising or placarding the sale of the B. V. D. merchandise unless the dealer is equipped to sell such underwear of the average or usual sizes that customers desiring to purchase that particular line would want.

This is a step in advance of anything yet taken in the direction of cleaner merchandising and will have an important bearing, if sustained, on the merchandising of trademark goods and is a distinct encouragement to the advertiser of such products as it will protect him in the good-will which he has created through the expenditure of capital.

REPORT BUSINESS GOOD

It is encouraging in these times when dividends are frequently being passed or reduced to learn that a Providence corporation, The Franklin Process Company, declared its customary quarterly dividend on September 18. The machines furnished by this company are claimed to bring about a large saving in dyestuffs, and are in particular demand at this time.

FINISHING COMPOUNDS

Finishing compounds of tried excellence for bleaches and print work, as well as cotton piece goods, are made in great variety by The Arabol Mfg. Co., 100 William St., N. Y. City, who make a specialty of sizings and finishing compounds. Alizarine Assistants, etc., for the use of textile manufacturers.

A MODEL MACHINE SHOP

The Merrow Machine Company of Hartford, Conn., has just completed another large addition to their already well appointed plant, adding materially to their manufacturing space as well as giving them much better office facilities. The representative of this paper clearly recollects the introduction of the Merrow system and its constant and rapid development, always keeping abreast with the times by the addition of new devices and improvements to their different machines. The business of this company has grown uninterruptedly and their product today is well and favorably known throughout the branches of the textile trades using their style of machines.

Their plant has the reputation of being one of the cleanest in the country, with the best of equipment. Its corps of master mechanics and workmen have been with them for many years. Their machines bear witness that they are not the work of novices, but of those whose training has been along such lines for many years and whose knowledge of machinery principles is well founded.

The offices, as well as the work rooms are light and airy, with particular attention paid to ventilation, sanitation and thorough first class equipment. Individual lockers and wash-bowls are provided for all.

Their line of special sewing and embroidering machinery includes machines for seaming, hemming and edge finishing; for finishing sweaters, welting the tops of stockings, closing the toes of hose, mending same, and other knitted fabrics. For finishing bed and horse blankets, marseilles quilts, table covers, none is more satisfactory than their system. In the textile trade these machines are used not only in the manufacture of knit goods, but also of clothing. For making pants pockets in one operation, seaming muslin underwear, ladies' dresses, kimonas, dressing sacques, these machines are used in large numbers. Many other lines have been developed on which these machines have been used, such as dress shields, men's and ladies' hats, wash-cloths and many other articles of clothing for personal and household use. A large field has been developed with superior machines, a thoroughly practical plant and principals ever on the alert to give the best possible service.

The firm of Ditta Teodora Koelliker of Milan, Italy, which has a branch house in Sao Paulo, Brazil, Rua Paula Souza 4-B, 4-C, Caixa 994, is desirous of introducing American textile machinery into Brazil and wishes to get in communication with machine builders, particularly such as have the French and Portuguese literature pertaining to machinery for spinning and weaving cotton and wool. They also desire to establish relations with manufacturers of pickers, pickersticks, lug straps, leather belting, roller and clearer cloth, and also roller leather for spinning cylinders. They request interested firms to write them at their Milan office as well as their Sao Paulo house. They are also interested in bleaching, dyeing and finishing machinery, electrical motors and apparatus suitable for mill equipment.

ABSORBENT COTTON AND GAUZE

Complete equipment for absorbent cotton and gauge, consisting of preparatory, carding, bleaching, tentering and drying machinery, is now offered according to the latest European methods by L. H. A. Schwartz & Co., Boston, who expect to complete arrangements for importations notwithstanding war conditions.

KISSEL MOTOR TRUCKS FOR WAR USE

Should Greece be drawn into the European war, the Kissel Motor Car Company will have the distinction of being the first American manufacturers to supply a fleet of motor trucks for use in the greatest war of the world's history. His excellency, Agamemnon Schliemann, Grecian minister to the United States, has given an order for fifty 1 1/2-ton KisselKar trucks to be delivered in New York for transit to Greece the middle of September. The Kissel factory has put on an extra night force of men to fill the order.

The trucks are intended for the commissary department of the Greek army. Greece is evidently determined to be fully prepared for any eventuality. The order is especially interesting on account of the important part which motor-driven vehicles are already playing in the war. Aside from the sensational operations of air craft, there is no new feature of the modern plan of warfare attracting more attention than the work of motor trucks.

The Greek contract was awarded to the Kissel Motor Kar Co. after a lively competition which included all the accepted tests of power and endurance. Every leading truck in America participated, and Minister Schliemann decided on KisselKars only after receiving reports and recommendations from a committee of mechanical engineers appointed for the purpose.

The chasses of the trucks are standard in every respect, the same as are being used in many branches of American business. Each truck weighs 4,400 pounds, has a tread of 57 1/4 inches, a wheel base of 132 inches, and a 36 h. p. motor with a 4 1/4 inch bore and 5 1/4 inch strike. The tires are solid. It is equipped with a standard stake body with 10 by 5.5 clear loading space.

WORKING OVERTIME

The New Process Gear Corporation, Syracuse, N. Y., reports that it is working overtime to keep up with a volume of business larger than any heretofore handled. Although the plant was doubled in capacity less than two years ago and was at that time claimed to be the largest in the world devoted exclusively to gear making, an additional building is now being erected, and the capacity of the case-hardening and heat-treating departments are again being doubled. Additional equipment already ordered for fall delivery includes: Ten Fellows gear sharpers, 15 Gleason bevel gear generators, 3 Bullard vertical turret lathes, 3 Heald grinders, 1 Landis grinder, 2 National Acme automatics and numerous special machines built to designs worked out by engineers of the company.

The total production of the plant in spur, spiral and bevel metal gears and New Process noiseless gears and pinions will after Jan. 1, 1915, be in excess of one million per year. A large part of this output is already contracted for by customers who have for years been large users of the New Process product.

SILK, WOOL AND COTTON YARN

William R. Russell, formerly proprietor of the Kensington Skein Silk Dyeing Co., has recently started up the Philadelphia Yarn Clearing House at 223 North 4th St., where he has installed two winding frames for the winding and backwinding of silk. He is also dealing in silk, woolen and cotton yarns. The plant is run by electricity.

SELF-LOCKING TACKLE BLOCK

J. S. Kunkle has recently associated himself with the Boston Self-Locking Block Co., office 532 Arch St., Philadelphia, Pa. The Boston self-locking tackle block is a device which holds the load when the man at the rope releases the strain. This is accomplished by means of a spiral sheave. It is claimed that with this block one man can lift one-third more than with an ordinary block of the same number of sheaves and can easily hold the load at any point. Descriptive circulars and price list may be obtained at the above address.

TREASURY DECISIONS

T. D. 34743. August 29, 1914. Silk hair nets. Appeal directed from decision of the Board of United States General Appraisers of July 3, 1914. Abstract 36066 (T. D. 34629) wherein it was held that certain silk hair nets which had been assessed with duty at the rate of 70 per cent. ad valorem under paragraph 350, tariff act of 1909, as articles made on the Lever or Gothrough machine were properly dutiable at the rate of 60 per cent. ad valorem under paragraph 402 of the said act.

T. D. 34755—G. A. 7597). Sepember 3, 1914. Clothing in part of braid. A dress suit, composed of wool and trimmed on the outside seam of the trousers legs with braid, is dutiable at 35 per cent. ad valorem, as "Clothing, ready-made . . . composed wholly or in chief value of wool" under paragraph 291, act of 1913, and not as "wearing apparel . . . appliqued" or as "articles made . . . in part of braid" at 60 per cent. ad valorem under paragraph 358.

T. D. 34761. September 11, 1914. Solidonia fiber. Solidonia fiber dutiable as a nonenumerated manufactured article at the rate of 15 per cent. ad valorem under paragraph 385, tariff act of 1913.

T. D. 34773. September 21, 1914. Drawback on corsets manufactured by the Corset H. Co., of Worcester, Mass., with the use of various imported materials.

Recent Textile Patents

BOBBIN CLEANER and Polisher. 1,110,988. Lafayette Holt, Burlington, N. C.

BOBBIN HANDLING Apparatus. 1,108,097. Bert A. Peterson, Rockford, Ill.

DRYING APPARATUS. 1,107,294. Curt Grau, Niederuzwil, Switzerland.

DRYING APPARATUS. 1,108,565. Emile Feuillette, Boulogne-sur-Seine, France.

DYEING APPARATUS. 1,108,233. Albert J. Rau, Clifton, N. J.

DRYING CYLINDER. 1,108,077. George D Kilberry, Worcester, Mass.

FABRICS and the Like, Machine for Feeding. 1,110,633. Carl J. Landin, Boston, Mass.

FABRIC-TREATING Apparatus. 1,109,819. Cay Buhl, Paterson, N. J.

FABRICS, Treating Textile and Other Porous 1,108,408. F. J. Staunton, Milwaukee, Wis.

KNITTED WEB and Making the Same. 13,788. Robert W. Scott, Boston, Mass.

KNITTING MACHINE. 1,107,816. George D. Mayo, Laconia, N. H.

KNITTING MACHINE Pattern-Controlled Stop Mechanism. 1,110,322. Albert Gee, Oak Lane, Pa.

LACE FABRIC and Making Same. 1,110,845. James Waterfield, Philadelphia, Pa.

LOOM. 1,109,090. Walter H. Underwood, New York.

LOOM. 1,107,553. Harry W. Smith, North Grafton, Mass.

LOOM, Filling Replenishing. 1,107,400. Oscar Bernier, Fall River, Mass.

LOOM Shuttle-changing Mechanism. 1,109,297. Oskar Loetzsch, Dresden, Germany.

LOOMS, Loose Reed Motion for. 1,107,546. Frederick Ott, Conshohocken, Pa.

MOISTENING MACHINE. 1,110,746. Frank B. Comins, Sharon, Mass.

SHUTTLE. 1,109,250. Vernon Royle, Paterson, N. J.

SPINNING FRAME Stop Motion. 1,108,127. Eston G. Brookshire, Kansas City, Kan.

SPINNING MACHINE Power Control. 1,109,195. Frank E. Bates, Whitinsville, Mass.

SPINNING MACHINES, Appliance for Use with Ring. 1,109,309. Hermann Staubli, Horgen, Switzerland.

SPINNING MACHINES, Device for Placing Travelers on Rings of. 1,110,690. Ambrose P. Hurt, Anderson, S. C.

SPINNING MACHINE Roving Clamp. 1,110,716. Gus F. Roberts, Fries, Va.

STOCKING and Knitting the Same. 1,110,443. Edward E. Kilbourn, New Brunswick, N. J.

THREAD-ROLLING Machine. 1,108,425. Chas T. Brennan, Waterbury, Conn.

THREADING DEVICE. 1,108,798. Chas. F. Schultis, Cleveland, O.

UNDERSHIRT. 1,110,501. Lulu S. Lee, Los Angeles, Cal.

UNDERGARMENT. 1,110,761. Milton S. Erlanger, New York.

UNION SUIT. 1,110,054. Nathan Hatch, Albany, N. Y.

UNION SUIT. 1,110,052. Nathan Hatch, Albany, N. Y.

UNION SUIT. 1,110,053. Nathan Hatch, Albany, N. Y.

UNDERGARMENT, Lady's. 1,110,749. Olive Johnson, Chicago, Ill.

UNDERGARMENT, Infant's. 1,110,459. Elizabeth R. Royce, Cambridge, Mass.

WARP STOP Motion. 1,109,212. John F. Dustin, Lawrence, Mass.

WATERPROOFING MATERIAL. 1,109,799. George W. Snyder, Los Angeles, Cal.

WATERPROOFING POROUS Surfaces, Composition of Matter for. 1,107,545. Wm. L. O'Kelley, Long Beach, Cal.

YARN from Bobbins, Machine for Cutting and Stripping. 1,109,949. T. P. Walsh, Boston Mass.

TRADE MARKS RECENTLY FILED FOR REGISTRATION

72,567. Silk curtains and silk goods. Mark: Kapock. Owner: A. Theodore Abbott & Co., Philadelphia, Pa.

78,377. Men's outer clothing. Mark: Glamorgan. Owner: Alfred Benjamin-Washington Co., New York.

78,873. Ladies' shirt waists. Mark: Martha Washington. Owner: Isidor Kaitz, New York.

79,031. Crepe piece goods. Mark: Crepe Vinita. Owner: Franken & Frank, New York.

79,271. Men's and boys' shirts and children's rompers. Mark: Red Diamond. Owner: Red Diamond Clothing Co., St. Louis, Mo.

79,280. Coats. Mark: "Newflex." Owner: The Stein-Block Co., Rochester, N. Y.

79,340. Knitted vests and undershirts. Mark: Modest Maid. Owner: Standard Knitting Mills Co., New York.

79,406. Muslin, nainsook, lawn, cambric, etc., undergarments. Mark: Dove. Owner: David E. Sicher, New York.

79,527. Bathing suits. Mark: Breakert. Owner: Oscar Carrabine, New York.

79,829. Bleached and unbleached muslins. Mark: Country Girl. Owner: Wheeler & Motter Mercantile Co., St. Joseph, Mo.

79,830. Bleached and unbleached sheetings. Mark: Queen of the Home. Owner: Wheeler & Motter Mercantile Co., St. Joseph, Mo.

C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON
GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

COTTON
WOOLEN
WORSTED MACHINERY

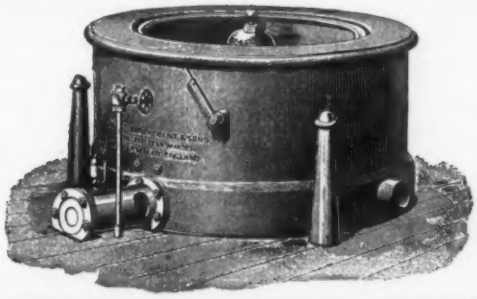
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

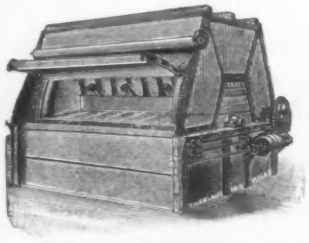
OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



SUSPENDED ON LINKS. REQUIRING NO EXPENSIVE FOUNDATIONS.

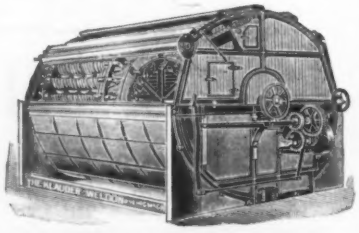
C. E. RILEY COMPANY, Sole Agents 65 Franklin St., Boston, Mass.

Machines Kept in Stock in Boston



RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTH'S TRIAL
YOU
TAKE
NO
RISK

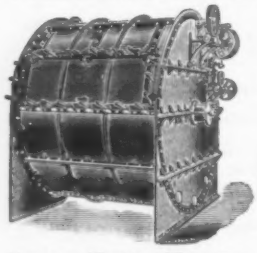


SKEIN AND SLUBBING MACHINE.

KLAUDER-WELDON DYEING MACHINE COMPANY

HUDDERSFIELD, ENGLAND. *AMSTERDAM, N. Y.*

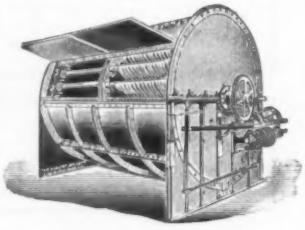
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins — Slubbing — Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

AFTER YOU TRY GARLAND RAWHIDE LOOM PICKERS, YOU WILL BUY MORE

The hide quality of our rawhide loom pickers is as good as the best obtainable hides can make them, and the workmanship as good as *skilled workmen* of many years' experience can produce. *Superior material* and workmanship with a rigid inspection during their manufacture are bound to produce loom pickers of superior quality.

How Many Shall We Ship You?

GARLAND MFG. CO.
SACO, MAINE

G
TRADE MARK

Buyers' Index

This department is conducted for the benefit of our subscribers. The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under headings to which they are entitled will please notify the publishers.

Air Moistening System.
——See Humidifying Apparatus.

Architects and Mill Engineers.
Cramer, Stuart W.
Dyer, W. E. S.
Ferguson, John W.
Main, Charles T.
Myrick, J. W. H.

Asbestos Covering.
Johns-Manville Co., H. W.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Tanks.
Scaife, W. B., & Sons.

Auctioneers.
Conant, J. E., & Co.

Autophones.
Couch, S. H., Co., Inc.

Automatic Feeds for Cotton and Wool.
Fuller, A. S.
Hetherington, John, & Sons.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Saco-Lowell Shops.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Smith & Furbush Mch. Co.
Speed and Stephenson.
Woonsocket Machine & Press Co.

Bale Presses.
Saco-Lowell Shops.

Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy, Co.
Smith & Furbush Mch. Co.

Ballers.
Saco-Lowell Shops.

Ball Bearings.
Hess-Bright Mfg. Co.
S. K. F. Ball Bearing Co.

Bandings.
Lambeth Rope Corporation.
Sternberg, Fred, & Co.

Baskets.
Diamond State Fibre Co.
Lane, W. T., & Bro.

Beams (Steel).
Mossberg, Frank, Co.

Beamers.
Crompton & Knowles Loom Works.

Belting.
Bond, Charles, Co.
Boston Belting Co.
Gandy Belting Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hood, R. H., Co.
Main Belting Co.
——See also Mill Supplies.

Belting, Leather.
Graton & Knight Mfg. Co.

Belting, Link.
Graton & Knight Mfg. Co.

Belt Cement.
Graton & Knight Mfg. Co.

Belt Dressing.
Graton & Knight Mfg. Co.
Stephenson Mfg. Co.

Belt Lacing, Leather.
Graton & Knight Mfg. Co.

Belt Tighteners.
American Tool & Machine Co.
Dodge Mfg. Co.
Hunter, James, Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Eyes.
Boston Belting Co.

Bleaching Kiers.
Arlington Machine Works.
Birch Bros. (Albert Birch, prop.)
Buhlmann, A. W.
New England Tank & Tower Co.
Philadelphia Drying Machinery Co.
Stearns Lumber Co., A. T.
Textile-Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Electro Bleaching Gas Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.
Wolf, Jacques & Co.
Worden Chemical Works.

Blowers and Blower Systems.
Autoforce Ventilating System.
Carrier Air Conditioning Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Kunze, Otto.
Leigh & Butler.
Mossberg, Frank, Co.
Parker Spool & Bobbin Co.
Speed and Stephenson.
Tebbets, E. L., & Co.

Bobbin and Spool Painting Machines.
Speed and Stephenson.

Bobbin Winders.
Altemus, J. K.
Lever, Oswald, Co.
Universal Winding Co.

Boilers.
——See Steam Boilers.

Books.
Chittick, James.

Boxes, Box Shooks, Etc.
Diamond State Fibre Co.
Pearson, J. T.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brass Hinges.
Root, C. J., Co.

Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Cocker, M., & Co.
Felton, S. A., & Son Co.
Mason Brush Works.

Brushing Machines.
Buhlmann, A. W.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Button-Hole Machines.
Reece Button-Hole Machine Co.

Button Sewing Machines.
Union Button Sewing Co.

Calico Printers' Machinery and Supplies.
Arlington Machine Works.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Rice, Barton & Fales Mach. & Iron Works.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Taunton-New Bedford Copper Co.
Textile-Finishing Machinery Co.
——See also Dyeing, Drying, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.

Cap Spindles.
Am. Textile Specialty Mchy. Co.
Speed and Stephenson.

Carbonizing Machinery.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Textile-Finishing Machinery Co.
Tolhurst Machine Works.

Card Clothing.
Ashworth Bros.
Buhlmann, A. W.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Speed and Stephenson.

Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Buhlmann, A. W.
Dronsfield Bros.
Firth, William, Co.
Leigh & Butler.
Richards, Atkinson & Haserick.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Speed and Stephenson.

Card Leather.
Graton & Knight Mfg. Co.

Carding Machinery.
Saco-Lowell Shops.
Smith & Furbush Mch. Co.

Card Stampers and Repeaters.
Hodgson, Walter W.

Carpet Machinery.
Altemus, Jacob K.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.
Textile-Finishing Machinery Co.

Carrier Aprons.
Graton & Knight Mfg. Co.

Castings.
Dodge Mfg. Co.
Hunter, James, Machine Co.
Lunkenheimer Co., The.
Schofield, Wm., Co.
Mohn, Wm. H.

Caustic Soda.
Wing & Evans.

Cell Driers.
Cutter, Geo. A.

Cement Pans.
Scaife, W. B., & Sons.

Chain Belts.
Morse Chain Co.

Chemists.
Little, Arthur D., Inc.
Lunkenheimer Co., The.

Clocks.
Pettes & Randall Co.
Watchman's Clock & Supply Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
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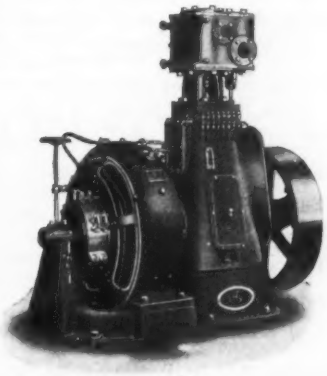
"This Little Set is a Wonder"



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Sturtevant
(REG. U. S. PAT. OFF.)

VS-7 GENERATING SET ON TEST

"I have known your fans for years" he said "but I did not know you built engines and generating sets like this." "This little set is a wonder, it is one of the finest I have ever seen," he continued as he watched its silent and vibrationless operatron.

During the last fifty years, fans and fan systems have been inseparably linked in the minds of engineers and manufacturers with the name STURTEVANT, but the other apparatus manufactured by this company are not so well known.

The same care and attention to design and construction that have made Sturtevant Fans standard, are given to our other products and the Sturtevant VS-7 and VS-8 Generating Sets are the result of fifty years experience in engine building.

These sets are entirely enclosed, yet every part is readily accessible. The lubrication system is either of the forced or gravity type as desired. They are economical in steam consumption, quiet and vibrationless in operation, For use as lighting units or as auxiliaries to the larger units these sets are most satisfactory. Built in sizes up to 150 K. W.

Ask for Bulletin 172-T

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General Electric Co.

Electric Fans.
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General Electric Co.
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Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

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Allis-Chalmers Mfg. Co.
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Johns-Manville Co., H. W.
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Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

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National Laundry Machinery Co.

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Are You sure that no ***underweight*** *shipments are being* ***accepted***—*no* ***overweights*** *being* ***delivered***—*and that the shipments are being passed over the scales in the quickest time?*

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AUTOMATIC **KRON SCALES** SPRINGLESS

Weighing on a Kron means simply **"Load and Look"**—there are no loose "weights"—no sliding of counterpoise—no lost moments or false motions to be paid for. Furthermore, when the load is removed, the indicator returns to zero, proving automatically that the scale is at balance.

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Send for our Catalogue. See how to reduce weighing costs and to increase efficiency in your business.

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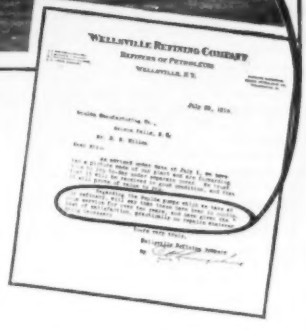
for automatic deduction of tare, so that only the net weight is shown on the dial.

Records like this, after years of continuous service, are largely responsible for the enviable HIGH QUALITY reputation of

GOULDS PUMPS

In Use 10 Years—But No Repairs



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If you want your pump to give service like this all you need do is to specify "Goulds."

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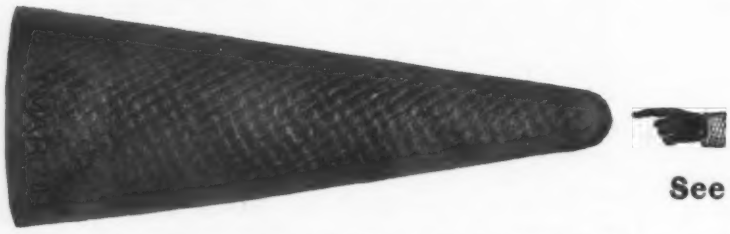

See the Point

The smooth round polished point allows the yarn to knit off without catching and breaking

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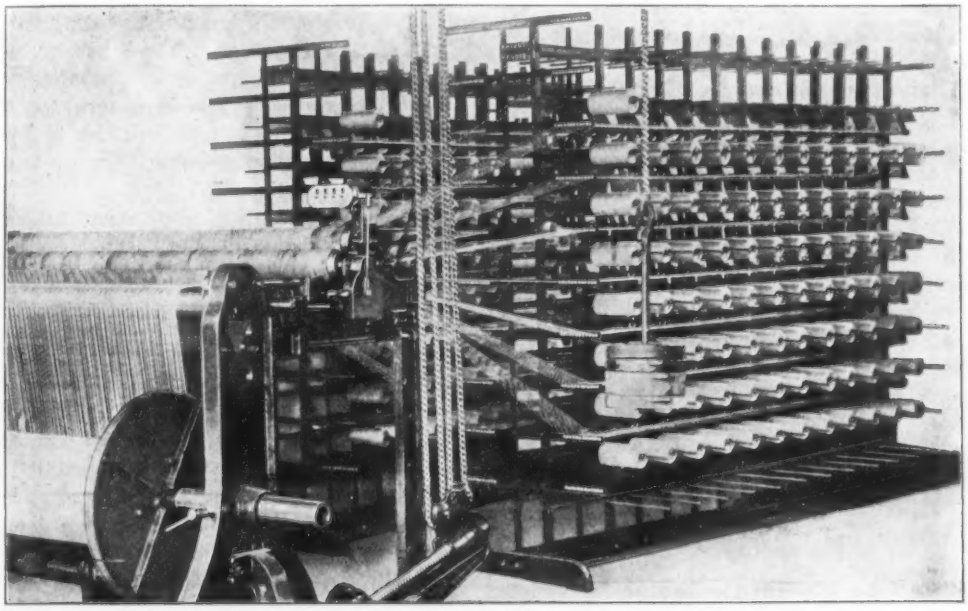

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Publishers' Page

A Better Feeling

The First National Bank of Boston, one of the largest financial institutions in New England, has recently published a statement on the New England situation from which the following extracts are taken. As the textile industries form such a large proportion of New England's manufacturing activities, this analysis of the situation has special value.

"Our large food supplies, inevitably in demand from the belligerent countries, have contributed powerfully to business confidence and self-control. At home, the intelligent co-operation between the Government, bankers and business men, has been strikingly effective. The various expedients adopted,—clearing house certificates, emergency currency, closing of stock exchanges, cotton warehouse receipts as a basis for additional currency,—all have tended to restore confidence and enable business to go forward.

"The financial situation has gradually improved, commercial paper has begun to move, and a distinctly better feeling is noticeable. It is not difficult to catalogue the abnormal conditions and hardships in business existing within the war zone and in this country.

"It is more important, however, to call attention to our own most fortunate position. The United States is isolated from the war, and we are a self-contained and self-supporting nation, able to supply our own current needs. It is estimated that our foreign trade is barely 1 per cent. of our domestic trade—a negligible quantity so far as affecting our national prosperity.

"In response to inquiries as to the effect of war thus far on various lines of business and the outlook for the future, a large number of representative New England firms have submitted confidential figures and opinions, which taken together give a broad view of prevailing business sentiment.

"The composite result is distinctly optimistic. The principal industries consulted were Textiles, Jewelry, Fertilizers, Chemicals, Spices, Paper, Office Supplies, Confectionery, Pianos, Paints, Machinery Equipment, Leather and Shoes.

"Certain interesting facts are brought out. First, since early August, there has been no general marked decrease in operating capacity; obviously, a few lines are for the moment restricting output, but this is overbalanced by increases in activity in other directions.

"There is a strong disposition to keep labor employed even in the absence of profit and a desire to keep organizations intact to meet a future demand, which manufacturers —almost without exception—believe is soon forthcoming.

"Again, the widely-heralded cancellations of orders were actually small in volume, disappeared after the first few days of war, and in many cases have since been reinstated.

"Not only that, but the volume of orders has held up to a remarkable degree during the first six weeks of the war.

"Naturally, there is a feeling of great uncertainty about the immediate future. Cotton manufacturers are at sea as to the price of their raw material, but their machinery is being kept running and, especially in the case of fine goods, at a profit.

"Worsted and woolen mills have been very active, their problem as to raw material, while somewhat similar to that of cotton, being not so immediate and not likely to be so acute.

"Here and there, mills and factories report large foreign orders which they believe are forerunners of greatly increased foreign business.

"In general, the consensus of opinion seems to be that New England's great workshop is shortly to be very actively engaged, not only in meeting the demands usually made upon it, but also in partially supplying that market, both domestic and foreign, heretofore held by the nations now at war."

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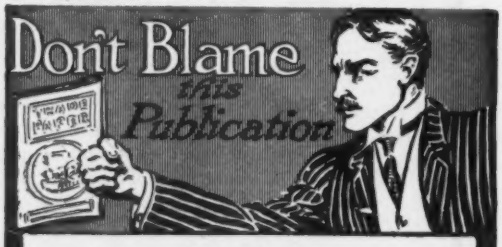

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at Salem, N. Y., on D. & H. R. R., with abundant WATER POWER all year. Fire protection system. A bargain on easy terms. Will Sacrifice to settle Estate.

J. P. GORMAN
1269 Broadway - New York

Dealers and Mill Owners

Please send us a *Detailed* list of New Cuttings, Old Rags, Ravellings, Felts and Yarn Waste you have in stock, stating quantities and lowest price for cash.

Please see that your list contains *everything* you have in stock.

The Albion Shipping Co., Inc.

Exporters of
New and Old Rags

132 Nassau St., New York

Wanted the New England Agency

for some article to be sold to the wholesale trade or large consumers by one of the oldest and best established concerns in Boston now representing reputable manufacturers. Address "Wholesale Agency," care Textile World Record, Boston, Mass.

A Well Known Firm of British Machinery Exporters in Manchester

IS PREPARED TO ACT AS

BUYING AGENTS IN ENGLAND

for Firms which desire to purchase British Textile Machinery and Accessories on the best terms.

Thoroughly acquainted with all branches of Textile Machinery trade.

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Address "Shippers," care Textile World Record, Boston, Mass.

FOR SALE

32" **Tolhurst latest type Extractor** equal to new. Price Two Hundred Dollars. One 30" Tolhurst Underdriven Extractor. Price One Hundred Ten Dollars. Also one 42" Tolhurst Overdriven Extractor.

Interstate Machinery Co., Troy, N. Y.

WANTED

To purchase a **Complete Hosiery Plant,** or good second hand **Hosiery Machines.**

FISHER KNITTING CO.,
Utica, N. Y.

We will Handle all Your Drafting and Designing for a Low Monthly Rate

Send for our time contract plan and cut down your drafting expense on special machines and tools. Our line of calculating charts will interest you.

The S. C. Carpenter Drafting and Engineering Co.
49 Oakland Terrace, Hartford, Conn.

Textile Chemist Wants Position

Textile Chemist and Purchasing Agent desires position. Five years' experience in analysis and purchasing of mill supplies and expert knowledge of dye stuff values. Address "Chemist," Textile World Record, Boston, Mass.

WANTED: POSITION

As Wadding Mill Manager

Any Company thinking about going into the Wadding business will find it of interest to consult me first. I have had fifteen years experience with Independent Wadding Companies in Massachusetts, Rhode Island, Tennessee, Alabama and Georgia. I have all the plans and specifications to start a Wadding Mill from the foundation of the building to the manufacturing of the finished product, and can furnish the very best of references. For further information address, George M. Miller, 616 Smithfield Ave., Saylesville, R.I.

FREE, A CATALOG of all important textile books sent on request by Lord & Nagle Co., Boston, Mass.

RAMIE ROVING WANTED

in one thousand and two thousand pound lots.

Strong Machinery & Supply Co.
48 Franklin Street, - New York City

The Logical Place To Advertise Second-Hand Machinery

The Textile World Record carries more advertising of textile machinery, equipment and supplies than any other textile periodical. Very many of its 400 advertisers use no other.

The reason for its continued success as an advertising medium for the sale of textile machinery is that:

Its subscribers buy about $250,000,000 worth of textile machinery, equipment, and supplies (not including raw material) each year.

Being so successful for new machinery it should also prove profitable for the advertising of second-hand machinery, and for the sale of anything of special interest to men in the mill who are held responsible for results, e. g., mills, power-plant equipment, supplies, etc.

Therefore, if you have any textile machinery, mill or power-plant equipment that you do not intend to use again, the Textile World Record offers you the best market for its disposal at a fair price. An advertisement this size costs only $16.00 an issue. For further information address:

Classified Advertising Department

Textile World Record 144 Congress Street Boston, Mass.

Situations Wanted

Manufacturers who are in need of Superintendents or Overseers for any department of mill work may learn of suitable men upon application by mail or telephone to C. T. DONLEVY, care Textile World Record, 144 Congress Street, Boston., who will give prompt attention to their requirements without charge.

Assistant Superintendent in knitting mill; has worked on heavy woolen underwear and half hose, also all kinds of plaited half hose; familiar with all makes of machinery; 25 years of age; good reference.
6306, Textile World Record, Boston, Mass.

Overseer of dressing, winding and spooling in woolen mill; has worked on fancy woolens and worsteds; familiar with Davis & Furber and Cleveland machines; 34 years of age; married; will not go to West, South, or to Canada; good reference.
6307, Textile World Record, Boston, Mass.

Overseer of worsted combing or combing and carding; has worked on fine wools, 1/2 blood Australian; all coarse wools, 1/4 blood and below, foreign or domestic, also well acquainted with fancy mixes; familiar with Taylor, Wadsworth, Prince, Smith, Crompton, Knowles combs and Davis & Furber cards; 35 years of age; married; good reference.
6285, Textile World Record, Boston, Mass.

Overseer of woolen or worsted finishing; has worked on fancy worsteds and piece dyes, broadcloths, kerseys, meltons, zibelenes, double cloth, teddy bear cloth, unions and cotton warp woolens, chinchillas, smoking jackets, coverts, cap cloths, bedford cords, etc.; familiar with all makes of finishing machinery; 29 years of age; married; will not go to N. J., West, South or to Canada; good reference.
6286, Textile World Record, Boston, Mass.

Sewing Machine Adjuster; has worked on balbriggan and ribbed goods; familiar with Merrow, Union Special, Willcox & Gibbs, overlock, Union button, Singer button and Singer button-hole machines; 35 years of age; good reference.
6287, Textile World Record, Boston, Mass.

Superintendent of small spun silk mill, assistant superintendent of large mill; would consider position of overseer of drawing, etc., in good mill; has worked on spun silk yarn; familiar with Lowell, Green, Schlunsberger, Greenwood & Battey, Universal winding and Aisacetion combers; 31 years of age; married; will not go South; good reference.
6288, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on worsted, Axminster, Ingrain and woolen yarns; 40 years of age; married; good reference.
6289, Textile World Record, Boston, Mass.

Secondhand, overseer or superintendent of dyeing; has worked on woolen, cotton and linen yarns; familiar with Klauder-Weldon machines; 25 years of age; married; good reference.
6290, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of woolen and worsted goods; familiar with all makes of woolen and worsted looms, Crompton & Knowles, fancy, automatic and dobby, Crompton & Stafford fancy and Mason dobby looms; 33 years of age; married; will not go South; prefers New England or Canada; good reference.
6291, Textile World Record, Boston, Mass.

Cotton Mill Superintendent; has worked on all classes of goods from coarse baggings to fine silk jacquards; familiar with all American makes of machinery; 27 years of age; married; good reference.
6292, Textile World Record, Boston, Mass.

Overseer of Carding or carding and spinning; has worked on all kinds of carpet yarns from 1/5 of a run up to 20 cut hosiery yarns, also asbestos; familiar with Smith, Furbush, Davis & Furber and Whiting machines; 42 years of age; married; will not go to Me., N. H., Vt., South or to Canada; good reference.
6293, Textile World Record, Boston, Mass.

Superintendent or asasistant manager for mill or office or both in a textile mill, preferably knitting or spinning mill; has worked on flat and rib knit underwear, men's and women's; on spinning, woolen and cotton system; familiar with Cooper spring needle, flat needle and nearly all German makes of knitting machines; Singer, Union Special, and Merrow sewing machines; Tweedale & Smalley's cotton spinning machinery and Davis & Furber mules and cards; 26 years of age; will not go to Canada; good reference.
6294, Textile World Record, Boston, Mass.

Overseer of Spinning in woolen mill; has worked on fine suitings and overcoatings, 1 to 9 run, also knit goods, cotton mixes; familiar with Davis & Furber machines; will not go to R. I., Vt., Pa., N. J., West, South or to Canada; 46 years of age; good reference.
6295, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all classes of goods; familiar with Crompton or Knowles looms of different makes; 50 years of age; married; will not go West, South or to Canada; good reference.
6296, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; might consider position as assistant designer or assistant superintendent; has worked on nearly all grades of woolens and worsteds; familiar with Crompton & Knowles looms; will not go West, South or to Canada; 45 years of age; married; good reference.
6297, Textile World Record, Boston, Mass.

Overseer of Weaving; has worked on worsteds; familiar with Crompton & Knowles looms; 41 years of age; married; good reference.
6298, Textile World Record, Boston, Mass.

Superintendent of Woolen Mill; would consider good position as overseer of weaving; has worked on worsteds, woolen and wool and cotton mixed goods; 50 years of age; married; prefers Mass., or N. H.; good reference.
6299, Textile World Record, Boston, Mass.

Overseer of Starching or mercerizing in cotton mill; has worked on percales, cambrics, sleeve linings, silesia, sateens, back filled calico goods, shirtings of all grades; familiar with Butterworth mercerizing frames and other machinery; 42 years of age; married; will not go South or to Canada; good reference.
6300, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; would consider good second hand position; has worked on ladies' dress goods, overcoatings, chinchillas, broadcloths, meltons, covert cloths, thibets, kerseys, piece dyes of all kinds, in fact all classes of goods; familiar with all makes of dyeing machinery; 24 years of age; will not go West, South or to Canada; good reference.
6301, Textile World Record, Boston, Mass.

Agent or superintendent of cotton mill; has worked on all kinds of cotton flannels and blankets, sheetings, shirtings, colored and fancy goods; 41 years of age; married; good reference.
6302, Textile World Record, Boston, Mass.

Superintendent of a plain cloth mill or yarn mill; has worked on sheetings, drills, ducks, lawns, scrims, voils, etc.; familiar with Saco, Lowell, Whitin, Mason, Fales & Jenks, Draper and other machines; 38 years of age; married; good reference.
6303, Textile World Record, Boston, Mass.

Manager or assistant of cotton mill; would consider position of overseer of dressing, spooling and glacing, etc.; has worked on cotton goods, American, Sea Island and Egyptian yarns; familiar with Universal winding, spooling, polishing and winding machinery; 36 years of age; married; good reference.
6304, Textile World Record, Boston, Mass.

Overseer of Dressing in woolen mill; has worked on all kinds of woolens, cottons, worsteds, wet or dry; familiar with Davis & Furber machines; 32 years of age; married; good reference.
6305, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on all classes of woolens and worsteds, piece and stock dyes, kerseys, broad cloths, suitings, thibets, meltons, chinchillas, blankets, government cloths, etc.; familiar with all makes of finishing machinery; 25 years of age, married; will not go West, South or to Canada; good reference.
6203, Textile World Record, Boston, Mass.

Overseer of Carding or spinning in woolen mill; has worked on all wool, cotton and wool mixes; cotton, wool and shoddy mixes, and all cotton; familiar with Smith, Davis & Furber cards and Davis & Furber mules; 48 years of age, married; will not go to Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6182, Textile World Record, Boston, Mass.

Overseer of twisting, winding, spooling and beaming; has worked on worsted, cotton and worsted, silk and worsted goods; familiar with twisting, spooling, winding and beaming machinery; 30 years of age, married; good reference.
6221, Textile World Record, Boston, Mass.

Overseer of Cutting in underwear mill; has worked on ladies', misses' and boys' underwear in the tuck stitch and the one and one; 23 years of age, married; will not go to Canada; good reference.
6222, Textile World Record.

Overseer of Knitting; has worked on stockinet goods, jersey cloths, astrachans, elderdowns, athletic goods, rubber and glove linings, bathing suits, elastic jerseys, underwear and some experience on sweaters; familiar with Crane, Tompkins, Campbell & Clute, Gormley, Leighton and Stafford & Holt machines; 40 years of age, married; good reference.
6143, Textile World Record, Boston, Mass.

Second Hand of cotton carding, boss grinder or overseer; has worked on blue tinge waste to 2 inch staple and 4s to 40s yarns; familiar with Whitin and Saco cards, Kitson pickers, Whitin & Saco draw frames, Saco & Woonsocket fly frames and some knowledge of Whitin combers; 24 years of age; prefers Canada or South, but is not particular; good reference.
6243, Textile World Record, Boston, Mass.

Assistant Superintendent of hosiery mill; would accept position as superintendent of small mill or overseer of any room in hosiery mill; has worked on all classes of hosiery; familiar with Banner, Invincible, Acme, Geo. D. Mayo, Scott & Williams footers, also Wildman, Scott & Williams and Brinton ribbers; will not go to Me., or Canada; good reference.
6183, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on woolens and worsteds; will not go West, South or to Canada; 48 years of age, married; good reference.
6184, Textile World Record, Boston, Mass.

Overseer of Carding in cotton mill; has worked on all classes of cotton on both fine and coarse numbers; familiar with Howard & Bullough, Dobson & Barlow, Woonsocket, Whitin, Potter & Johnson and Providence machines; 38 years of age, married; will not go to Me., Pa., N. Y., N. J., West, South or to Canada; good reference.
6185, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on all kinds of goods and is familiar with English and American makes of machinery; will not go to Me., Pa., N. Y., N. J., West, South or to Canada; 49 years of age, married; good reference.
6254, Textile World Record, Boston, Mass.

Designer; has worked on cotton, half wool and half silk goods; familiar with all machinery used in Europe; 36 years of age; married; good reference.
6255, Textile World Record, Boston, Mass.

Second Hand of Card Room in woolen mill; would consider small boss carding position; has worked on all kinds of goods; 30 years of age, married; familiar with almost all kinds of machines; good reference.
6256, Textile World Record, Boston, Mass.

Fixer on Hosiery Machines; has worked on worsted and cotton hosiery; familiar with George D. Mayo, Standard, Scott & Williams half hose machines; good reference.
6257, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on men's wear, overcoatings, cloakings, dress goods, worsted, woolen and cotton; familiar with Knowles and Crompton looms; 50 years of age, married; will not go South or to Canada; good reference.
6258, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; would consider good second hand position; has worked on all wool, low stock, cotton and silk noil and cotton and wool; familiar with Davis & Furber, Johnson & Basett and Paul mules; 38 years of age, married; will not go to Me., Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6194, Textile World Record, Boston, Mass.

Overseer of Weaving in cotton mill; has worked on anything in the line of cotton goods; familiar with almost any kind of machinery; 45 years of age, married; will not go West, South or to Canada; good reference.
6247, Textile World Record, Boston, Mass.

Assistant Agent, superintendent or assistant superintendent in cotton mill; would consider good mechanical position in cotton mill also; has worked on sheetings, domets, flannels, table felts, mole skins, ounce goods, etc.; familiar with carding, spinning and weaving machinery; 28 years of age, married; good reference.
6248, Textile World Record, Boston, Mass.

Assistant Superintendent of carpet mill; has worked on worsted and woolen yarn manufactured from bale to finished yarn; also all classes of carpet wools; will go anywhere for a good position; 26 years of age; good reference.
6249, Textile World Record, Boston, Mass.

Overseer of Plush Finishing; has worked on plush, velvets, seals and beavers; familiar with plush and velvet finishing machines, all classes; 50 years of age; will go anywhere for a good position; good reference.
6250, Textile World Record, Boston, Mass.

Designer in Cotton Mill or boss weaver and designer; has worked on cotton, silk and worsted dress goods, jacquards, damasks, table covers, bed spreads, narrow fabrics, dress and corset trimmings, elastic goods, silk labels and belt covers; familiar with jacquard and dobby looms; understands fixing and tying up of jacquard harness cutting cards; warp dressing and long chain beaming, also finishing of cotton goods; 42 years of age, married; will not go to Canada; good reference.
6251, Textile World Record, Boston, Mass.

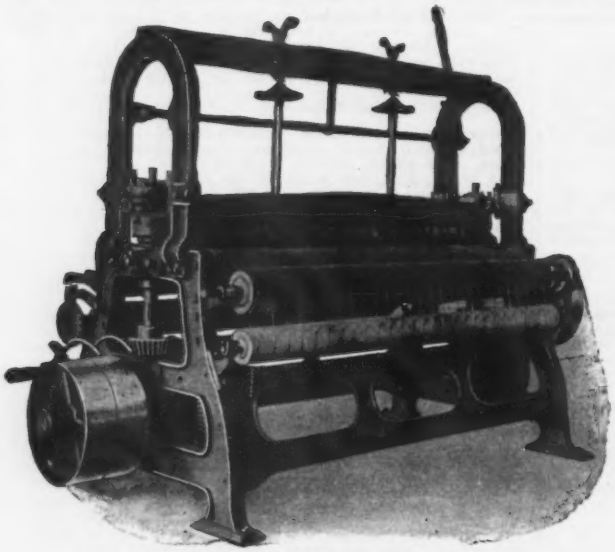
Overseer of Finishing in woolen or worsted mill; has worked on all kinds of woolen and worsted goods; familiar with all kinds of finishing machinery; 50 years of age, married; will not go West, South or to Canada; good reference.
6252, Textile World Record, Boston, Mass.

Overseer of Dyeing in woolen mill; has worked on all grades of raw stock, wool, shoddy, cotton and silk; piece dyes, heavy and light worsteds, dress goods, unions, chinchillas and worsted yarns; understands the principles and advantages of most dyeing machines; 27 years of age; good reference.
6253, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on high and low stock, all wool and cotton mixes, shirtings, dress goods, overcoatings, suitings, mackinaws and broadcloths; familiar with all makes of American cards; 35 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6272, Textile World Record, Boston, Mass.

Designer or boss weaver in woolen mill; would consider both in small mill; has worked on worsteds and woolens; familiar with all kinds of machinery; 38 years of age, married; will not go to Pa., N. Y., N. J., West, South or Canada; good reference.
6273, Textile World Record, Boston, Mass.

CHINCHILLA MACHINE



For producing
the following finishes:

Chinchilla
Petersham
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Manufactured by
D. R. Kenyon & Son
Raritan, N. J.

ALSO MANUFACTURERS OF
Tentering and Drying Machines, Crabbing Machines, Cloth Washers, Whipping Machines, Etc.

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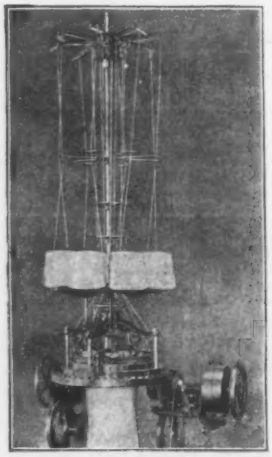


For all makes and sizes of

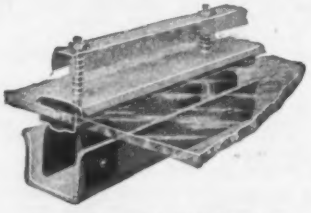
Circular Rib Knitting Machines

Twenty Years of Experience and Success

Adapted for HEAVY SWEATER yarns as well as UNDERWEAR work

Crawford Manufacturing Co.
NEW BRUNSWICK, N. J.

Commercialized Sunlight



ANTI-PLUVIUS
(Trade Mark)
Puttyless Skylights
Patented

You *can* have daylight without leaks and renewals. Become acquainted with "Anti-Pluvius" Puttyless Skylights. They have results you can't afford to miss. Your neighbor probably has "Anti-Pluvius" or a "Straight-Push" Sash Operator on his mill. Write us, we can show you the way out of troubles into profits.

The G. Drouvé Co., Bridgeport, Connecticut

WOOLEN MILL NEWS

*Maine, Kennebunk. According to William Batchelder, superintendent of the Goodall Worsted Company at Sanford, nothing definite has been decided as yet in regard t the enlargement of the Kennebunk Mills. Mr. Batchelder states that the enlargement is only under contemplation. As noted in a previous report the Kennebunk Mills, which are owned by men interested in the Goodall Worsted Company, owners of the Popular Palm Beach Cloth, will be enlarged if satisfactory arrangements can be made for the purchase of land and obtaining power.

Maryland, Baltimore. A 3-story brick mill, 88 by 25 feet, will be built by the Oriental Rug Company at a cost of about $10,000. Looms and other equipment for weaving rugs will be installed. The new mill, which will be located at Linden Ave. and Preston St., will take the place of the present building at 1101 Cathedral St. S. Russell, 2900 Clifton Ave., Baltimore, is the architect.

*Massachusetts, Clinton. Extra hands are being employed at the Bigelow Carpet Company in setting up the 110 looms that are being installed in the new mill. According to Alvin J. Higgins, the company has enough material on hand for the dyeing department to keep them going until January 1, and Mr. Higgins expects they will not be affected at any time by the dyestuff situation.

*Massachusetts, Holyoke. Samuel M. Green, of Holyoke, is the architect and engineer for the new dye house and power plant for the Germania Mills. The dye house will be 60 by 180 feet, 1 story high, of mill construction, and the power house will be 60 by 100 feet, with an ell 24 by 33 feet, part 1 story high, and part 2 stories high.

Massachusetts, Hudson. New washing machines, a new dryer, and two sets of new finishing gill boxes have been put in the plant of the Hudson Worsted Company and all the equipment has been given a general overhauling. Preparations have been made to do finer work. The Hudson Worsted Company has equipment of 19 cards and 16 combs and does a business of wool combing on commission.

Massachusetts, Hyde Park. A permit has been granted the American Felt Company for the erection of a brick water tank at 1344 Hyde Park Ave.

Massachusetts, Lowell. The power trouble which has caused some difficulties at the Musketaquid Mills of the United States Worsted Company during the past few months has been remedied, and a new engine is being installed.

Massachusetts, Millbury. A new wool dryer with a capacity of 22,000 pounds per day is being installed in the plant of W. W. Windle Co., greatly increasing their output. They are scourers, carbonizers and dyers of wool, waste and rags. The plant closed for a few days to facilitate the installation of the new dryer.

Shall We Do It?

We Can—If We Will

IT has been said that with all Europe at war "America must now shoulder the world's work."

The terrible war now raging has drawn from the fields and factories of Europe the workers who have supplied not only their own countries, but the rest of the world, with some of the necessities and luxuries of life.

The condition has been heralded as an unprecedented and never-to-be-expected-again opportunity for this country and all sorts of predictions have been made as to the ultimate commercial gain for the United States.

In that case, the textile industry, the greatest in this country may have to increase its output, and consequently, be forced to increase its capacity and manufacturing equipment.

As a result those making textile machinery, factory equipment or supplies will benefit by an increased demand for their products and those who will derive the greatest benefit are the ones whose names and product are best known to the buyers in textile mills.

And if you make machinery, equipment or supplies usable in textile mills you can reach the men who have authority to buy your product through the medium that specializes on this end of the industry, the Textile World Record.

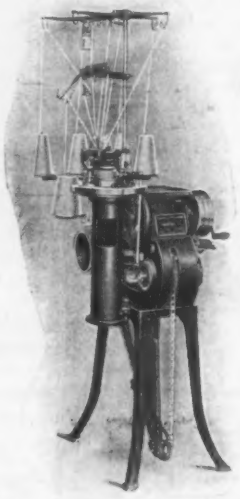
Of the Textile World Record's 400 regular advertisers over 100 sell machinery, mill equipment or supplies not advertised in any other textile periodical.

Textile World Record

144 Congress St., Boston, Mass.

Here's the Machine that Saves 7 to 15 Cents a Dozen

On the Manufacturing Cost of Half Hose



IMPROVED MODEL F MACHINE

Is there an abundance of skilled labor for topping in your locality? If so, you are fortunate.

If not, you should **investigate our Model F Machine,** which produces half hose **without skilled labor** at a saving of from 7 to 15 cents per dozen, and makes women's stockings with a knitted turned welt, dropping both from the machine.

Established 1805

SCOTT & WILLIAMS, INC.

88 PEARL STREET
BOSTON

NEW YORK UTICA

KNIT.

New Mills.

*Pennsylvania, Philadelphia. N. Neuman, formerly with the Puritan Knitting Mills, and recently reported by us as starting up a plant for the manufacture of sweater coats, has leased a floor in the Larkin Bldg. at 2200-2220 Arch St., where he is installing about 20 flat knitters and the same number of sewing machines, the plant being operated under the name of the Saxony Knitting Mills with Mr. Neuman superintending the plant and L. M. Rosen, formerly with the Royal Ascot Knitting Mills, in charge of sales department.

Pennsylvania, Philadelphia. A. Rubin & Sons are starting up the Philadelphia Sweater Mills at 335 Market St., with A. Rubin as superintendent and buyer. The plant will contain 6 knitting and 10 sewing machines, operated by electric power. The production will be sweater coats for men and women of woolen and worsted yarns and will be sold direct.

Pennsylvania, Philadelphia. Estimates are being asked on plans for an addition, two stories, of brick, 45 by 58 feet, to be made to the Brighton Worsted Mills, manufacturers of worsted fabrics at Tioga and D Sts.

Pennsylvania, Philadelphia. Louis Rubin, formerly with the United Knitting Mills, is starting up the Zephyr Knitting Mills at 418 Market St., where he will manufacture high grade infants' sweater coats, using zephyr and combination yarns. The plant will commence operations with 8 flat knitting machines and 10 sewing machines. It will be operated by electricity and the product will be sold through A. J. Armstrong, New York.

Pennsylvania, Philadelphia. The White Knitting Mills have been started up at 1132 North 2nd St., where 3 knitters and 4 sewing machines have been installed for the manufacture of sweater coats. Several more knitters will be added within a short time. The production is sold direct and woolen and worsted yarns are bought by Mr. White, who was formerly connected with the Pennsylvania Knitting Mills of this city.

Pennsylvania, Reading. H. J. Borkert, Box 363, is about to start up a plant for the manufacture of silk hosiery, 220-240 needle goods, which he intends selling direct.

Pennsylvania, Shillington. Raymond F. Becker of Reamstown will begin manufacturing here with 15 knitting machines on 144-needle half hose. It has been previously reported that Mr. Becker was about to start up a plant in Reamstown, but inability to secure sufficient help caused him to locate in Shillington.

Prince Edward Island, Tryon. A corporation has been organized under the name of the Reid-Rayner Knitting Mills, Ltd., with capital stock of $36,000, and a small plant has been established for manufacturing men's all wool underwear.

Rhode Island, Centredale. A new dam and breakwater are being built by the Centredale Worsted Mills.

Enlargements and Improvements.

Maine, Lewiston. Some new knitting machines have been set up in the plant of Laurendeau Bros., who have a small knitting department in connection with their boot and shoe business at 282 Lisbon St. Woolen stockings are manufactured.

Minnesota, Minneapolis. No definite statement can be made regarding the quantity of new machinery to be installed in the additions built by the Northwestern Knitting Company. Present equipment has been very crowded and will be spread out more or less over the new space, but a large amount of new machinery probably will also be required although particulars cannot be given at this time. The Northwestern Knitting Company manufactures "Munsingwear" underwear, and as noted in a recent report they are now doing a far larger business than at any time in the concern's history.

Minnesota, Minneapolis. Three new knitting machines have been installed in the Weyer & Tosney Knitting Company. This machinery is part of an order of foreign machines that was placed several months ago. Sweater coats, underwear, hosiery and fancy knit goods are manufactured.

New Jersey, Boonton. It is reported that the Boonton Hosiery Company has awarded the contract for the erection of a new building to cost $23,000. This is a new company organized less than a year ago which manufactures silk hosiery on 20 full fashioned machines. George E. Fichtner is president, treasurer and buyer.

New York, Brooklyn. The company recently organized under the name of Oriental Textiles, Inc., is a reorganization of the Liebrecht Mfg. Company, 2764 Atlantic Ave., Brooklyn, and will continue the business at the same address. M. S. Liebrecht is president as before; Mrs. H. Liebrecht, vice-president; J. S. Dubroff, secretary and treasurer, and L. O'Lena, formerly of Cohoes and Waterford, N. Y., is superintendent. As a result of this reorganization they will enlarge the business of manufacturing wash cloths and also add the manufacture of a full line of sweaters and bathing suits. The incorporation of this company with capital stock of $5,000 was recently noted.

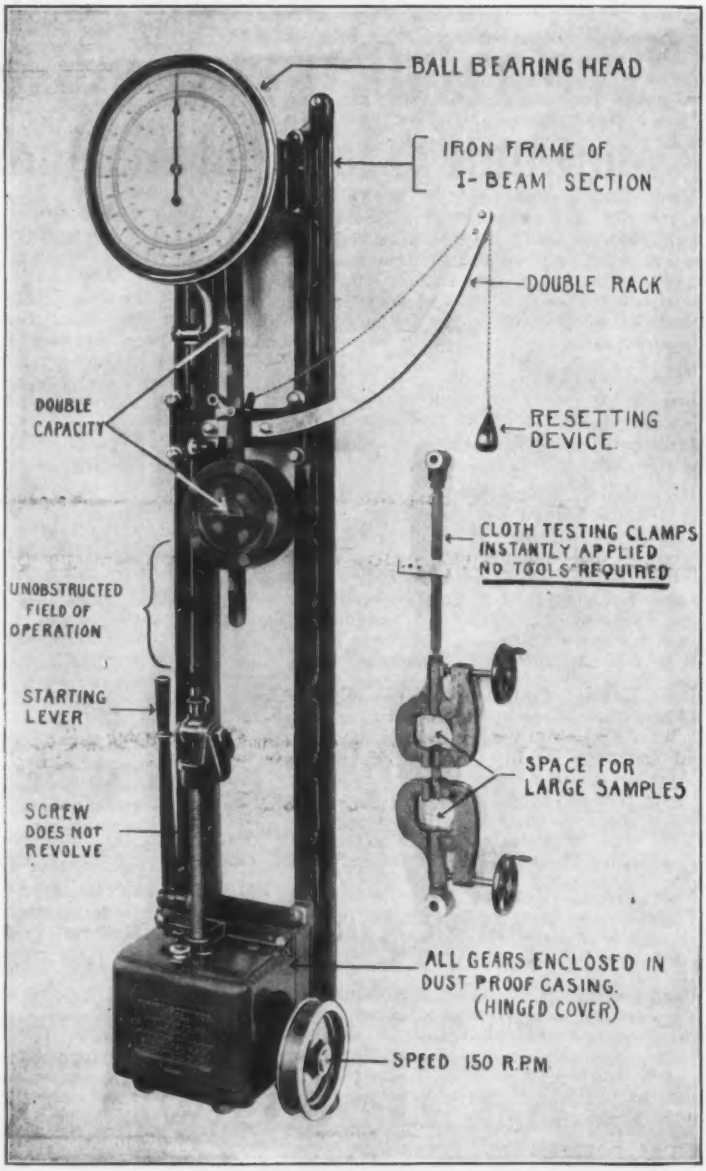
North Carolina, Winston-Salem. Plans have been made by the P. H. Hanes Knitting Company to erect a paper box factory and it is understood that the concern will proceed at once with the erection of the building. Early in the year the P. H. Hanes Knitting Company increased its authorized capital stock from $600,000 to $2,000,000 and purchased a large lot of land for the purpose of expansion. It is understood that besides building a new box factory the present factory will be extended considerably and a quantity of new machinery installed to increase the capacity of the mills to meet the demands of their trade.

Pennsylvania, Allentown. The Allentown Eiderdown Co., who have been operating the equipment of the Southdown Knitting Co., will, it is said, continue running the plant until the expiration of their lease around the first of the year. The prospects are that a sufficient amount of new machinery will be purchased by the company to start up again at another location.

TESTING MACHINES

This machine is but one of many styles which we build, and can be used for testing either yarn, cloth, or both. It is a double machine capable of delicate tests on light material and has a high capacity for heavy goods. It can be instantly set and is quickly and easily operated. Push the lever to start, the sample is broken, the machine reversed and stopped automatically. It is solid, substantial, practical, accurate and fully guaranteed.

Write for catalog "C" or for a machine on approval


BALL BEARING HEAD
IRON FRAME OF I-BEAM SECTION
DOUBLE RACK
DOUBLE CAPACITY
RESETTING DEVICE
CLOTH TESTING CLAMPS INSTANTLY APPLIED NO TOOLS REQUIRED
UNOBSTRUCTED FIELD OF OPERATION
STARTING LEVER
SPACE FOR LARGE SAMPLES
SCREW DOES NOT REVOLVE
ALL GEARS ENCLOSED IN DUST PROOF CASING. (HINGED COVER)
SPEED 150 R.P.M.

HENRY L. SCOTT & CO.

PROVIDENCE, R. I.

KNIT.

New Mills.

*Canada, Ontario, Brantford. Plans and specifications have been made for the new branch plant of the Niagara Silk Mills, of North Tonawanda, N. Y., and call for the construction of a $35,000 building. They are unable at this time to give any idea as to when the Canadian branch will start operations. A new company will be organized under the name of the Niagara Silk Mills, Ltd., to carry on the Canadian business. The Niagara Silk Mills are the manufacturers of the "Niagara Maid" brand of double tipped silk gloves, underwear and hosiery.

*Massachusetts, Holyoke. Construction contract for one of the new buildings to be erected for the Germania Mills has been awarded to Caspar Ranger and preliminary work has been started. It has been noted that the Germania Mills will build a new dye house and a new power plant.

*New Jersey, Passaic. Work has been started on the Passaic plant of Paul Guenther, Inc., manufacturers of men's and women's fashioned silk hosiery. This branch of the Dover plant will be four stories high, of brick construction and will be located on land bordering the Lackawanna R. R. tracks where fourteen acres have been purchased. This plant in no way affects the one in Dover.

*New Jersey, Trenton. The Goodwear Hosiery Mills, 143 E. State St., organized in April with capital stock of $100,000, do not plan to manufacture before 1915. The concern was organized by S. Irvine Bell, of Philadelphia, who has been in the mail order business for many years. Mr. Bell was formerly a hosiery manufacturer. It is planned to manufacture men's, women's and children's hosiery in various qualities, but until a plant is equipped the concern is having its goods manufactured. Mr. Bell is president and buyer, and Wellington E. Breese, is treasurer.

North Carolina, Morganton. Manufacturing has been started by the new Vaudois Knitting Mills. A mill has been built and equipped to manufacture hosiery. B. F. Davis is president and John Long is secretary and treasurer.

*Pennsylvania, Allentown. The L. & S. Knitting Co., who are arranging to start up in the manufacture of infants' knitted union suits at 722 Linden St., have their equipment, consisting of 6 knitters and 12 sewing machines, on the floor, and will begin to set it up and start it in operation within a short time. The production will be sold through New York and managed by J. Fink Thompson.

Pennsylvania, Mohnton. M. C. Killian, formerly connected with the Electric Hosiery Co. is remodeling a building formerly used as an electric light plant and will install equipment for the manufacture of 144-needle half hose. Mr. Killian is now arranging for the machinery and supplies.

WOOLEN.

Enlargements and Improvements.

New York, Newburgh. Ground has been broken at West Newburgh for a large addition to the plant of the Stroock Plush Company, manufacturers of carriage robes, plushes and moquettes. The new building will be of steel and concrete construction throughout and will be erected at the corner of Little Brittain Road and Wisner Ave. Albert B. Hager, 50 Church St., New York, is the architect, and has prepared plans for a building, 3 stories high, which will contain 52,000 square feet of floor space. The new addition will be erected without delay. The present equipment of the Stroock Plush Company is 14 sets of cards and 72 looms, operated by steam and water power. The concern is operated by the same interests that operate the large Stroock Felt Mills. Louis S. Stroock being president, and Mark E. Stroock, treasurer of both concerns. James N. Firth is superintendent of the Stroock Plush Company and B. A. Stroock is buyer.

*New York, Auburn. The addition being built to the boiler house of the Auburn Woolen Company will provide space for three new boilers. This addition was recently noted. They are also building an addition to the mill which will enable them to put in four sets of cards and the spinning machinery to go with them. Fine woolens are manufactured. Jesse H. Metcalf is president; Stephen O. Metcalf, Providence, R. I., treasurer, and T. M. Clark, superintendent.

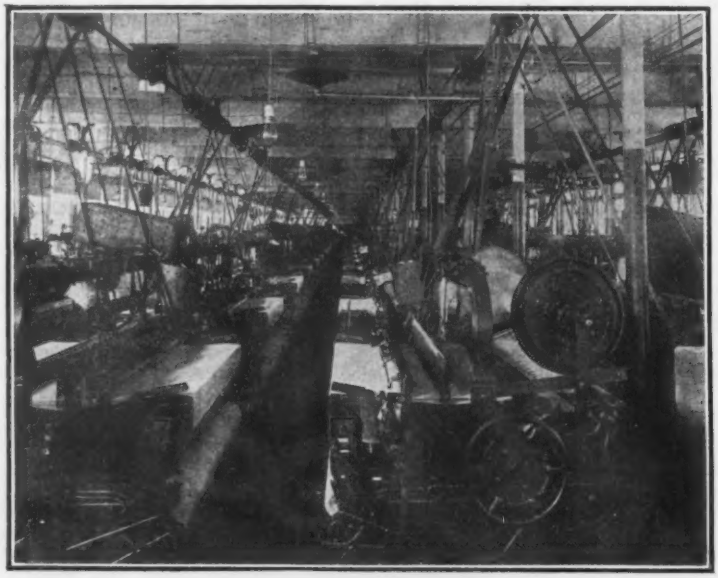
Rhode Island, Hope Valley. A 60 h. p. gas engine is being installed by the Locustville Woolen Company as an auxiliary to the steam and water power which are inadequate to run the plant at certain periods of the year.

Rhode Island, Providence. Twelve new fancy looms and a number of additional winding spindles are to be installed by the Colwell Worsted Mills. The plant has been running overtime four nights a week and they will increase this to all night running with two shifts of operatives.

Rhode Island, Providence. At the Langford Worsted Mills of the Cleveland Worsted Mills Company, 44 new fancy looms are being installed. It is understood the spinning department is to be discontinued at Providence and the yarn equipment removed to one of the other plants of the Cleveland Company. The weave room will be operated overtime four nights a week.

*Rhode Island, Washington. Work on the foundation for the new weave shed that is being built by the Livingston Worsted Company has been completed and work has been started on the main structure. Particulars have been given previously.

Wisconsin, Frederick. A dam is being built at Clam Falls and on its completion electric light and power will be furnished to Frederick. The Frederick Woolen Mill, a small plant here, will change over to electric power as soon as the power development is completed.



ANACONDA
ELEVATING
TRANSMITTING
CONVEYING
BELTING

Increase Your Plant's Efficiency 5 to 20% Without Additional Cost

THE weave shed of the American Yarn Company, Pawtucket, Rhode Island, shown above in photograph, a short time ago was running at 60 per cent. of its possible efficiency. In two weeks after one-half of the looms in this shed were equipped with Anaconda Belting, the efficiency was increased to 68½ per cent. At the present time a little over two-thirds of this shed is equipped with Anaconda Belting and the efficiency is 72 per cent. In short, an increase of 20 per cent. in capacity.

An Anaconda Belt will give longer service per dollar of cost than a leather belt.

¶ We will be pleased to send a representative with a sample Anaconda Belt and a tachometer (if you do not have one) to make an efficiency test at your plant without cost or obligation on your part, to demonstrate that such an increase is possible on your machines. Address Department A of the branch nearest to your plant.

MAIN BELTING COMPANY

New York City
309 Broadway

12th and Carpenter Streets
PHILADELPHIA

Birmingham, Ala.
22 South 20th Street

THE TEXTILE INDUSTRIES DEPARTMENT OF LEEDS UNIVERSITY

The struggle for recognition through which science passed at the older universities of classical foundation during the nineteenth century is curiously analogous to that through which technology is passing and has passed at the universities of more modern foundation. It is interesting to note, however, that so far as the University of Leeds is concerned, technology has always received wholehearted recognition.

The more recent developments in the textile industries department have been directed towards placing all the work on a more scientific basis and towards tightening the bonds between this and the scientific and commercial departments of the university. This object is being achieved in two ways. In the first place, courses are now outlined whereby a student may take either a science or an arts or a commercial degree in combination with textile studies. Such courses occupy three or four years and are so arranged that while the student gains all the benefits of scientific or classical culture, fitting him for occupying leading positions in the commercial world and especially for the consular service, he at the same time gains a thoroughly useful and practical knowledge of the textile industries, including the scientific and economic principles involved in all the more complex textile processes. Such a comprehensive scheme of study would be unthinkable and unworkable but for the wonderfully complete textile equipment which the university owes to the clothworkers' company. Thus it may be safely said that a better and more comprehensive view of the textile industries is obtained by means of this department in three or four years than in seven to ten years in the factory or warehouse alone. There are, of course, many matters which can only be acquired in actual practice, and for this reason students are recommended, at some period of their career, to spend some time in the works; but this granted, it may reasonably be claimed that the schemes of study outlined, followed to a satisfactory conclusion, mean a saving to the student of three or four years with a consequent proportionate increase in business efficiency. Thus, in the coming session, textile students are to be urged to take more advantage of the university departments dealing with the allied sciences, and on the other hand, students in the scientific and commercial departments of the university may more readily make themselves acquainted with the details of one of the principal industries of Yorkshire.

The second devlopment which is being taken in hand is the organization of all the work of the textile department on scientific lines. To facilitate this, the testing section of the department is being markedly extended, an additional laboratory being allotted and every recognized machine for testing from the fiber to the cloth installed therein. Thus, so far as the wool industry is concerned, the textile industries department is organized to deal with every process on a scientific basis. Research is also to be very definitely advocated and encouraged, and in furtherance of this object a special lectureship in textile industries has been instituted.

The development of textile design and ornamentation has also been given consideration. In connection with the Leeds School of Art, a scheme for the definite study of artistic design has been formulated, and students wishing to study historic and contemporary textile design will find wonderful facilities for practically carrying out the same on the university looms.

The illustrated textile prospectus, which may be had on application to the secretary of the university, gives a most interesting outline of the schemes of study and of the equipment.

In view of the changed conditions of the Continental, Colonial and American supply and demand in the various sections of the textile industries incident upon the present war, attention may be directed towards two ways in which the university may serve the manufacturing community. In the first place, it is not saying too much to state that the university is organized to teach the practical manufacture of any and every type of wool, yarn and fabric. Manufacturers wishing to study any particular style,—more particularly those up to the present supplied from the Continent,—with the idea of commencing its manufacture, will be specially dealt with by the university experts.

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FACTS AND GOSSIP.

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Massachusetts, Lawrence. It is expected that the Pacific Mills will now make plans for the rearrangement made necessary by the seizure of part of the Atlantic Mills property for the new Central Bridge project. Charles T. Main, the arbitrator, has made his findings in the matter of damages and awards $296,800 to the Pacific Mills.

Massachusetts, Lowell. Parker, Wilder & Company, Boston and New York, are the new selling agents for the Boott Mills. No announcement of the annual vacation for operatives has been made. Certain departments are running nights, but it is said this activity is for the purpose of balancing other departments rather than on account of rush orders.

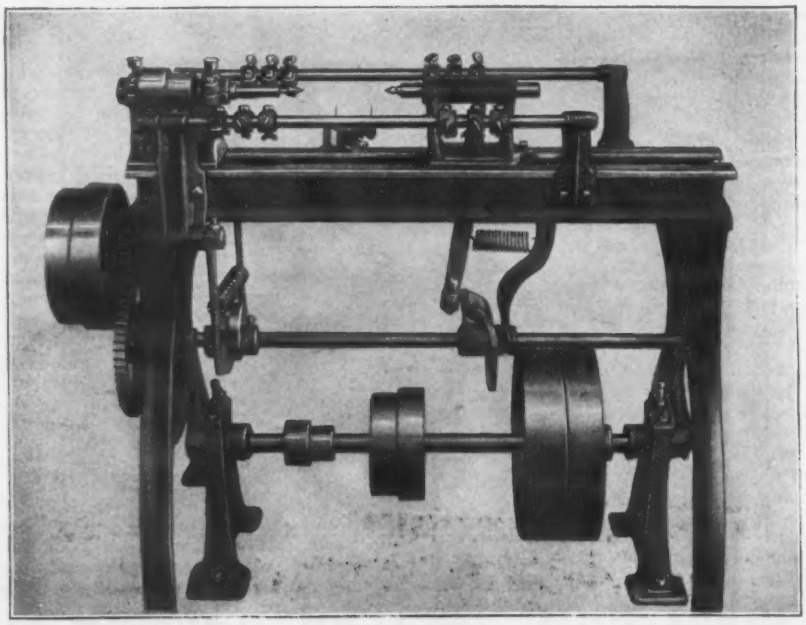
Massachusetts, Lowell. The Union Webbing Company, which rented manufacturing space on Thorndike St., has moved its machinery to the Howard Braiding Company's mill at Providence, R. I. Seventeen looms were operated on cotton, mercerized and silk webbing.

Massachusetts, Lowell. The Pentucket Narrow Fabric Mills are now operating 17 looms on tubular neckwear and belting at 17 Bolt St. They use 2/40s, 2/60s and 2/80s combed Sea Island mercerized yarns. Andrew Y. Rodger is buyer.

Massachusets, Lowell. It is understood that the project to establish an artificial silk plant in Lowell, which was being agitated a few months ago, has been dropped. The promoters were seeking to interest $200,000 of Lowell capital.

Massachusetts, Methuen. The International Worsted Mills, a small worsted weaving plant established here several months ago, is operating 26 looms on fancy worsteds. Frank G. Murch, formerly connected with the Selden Worsted Mill at Lawrence, is the proprietor and buyer.

A 75% Saving on Labor in Cotton and Other Mills



The J. E. Lock Bobbin and Spool Painting Machine

Paints Bobbins, etc., at one-fourth the Cost of Hand Painting

EVEN with a boy operating it 16 to 25 bobbins can be painted, exactly alike, each minute—without wasting any paint. The machine will pay for itself in less than a year. ¶ Here's a chance for Cotton, Worsted and Woolen Mills to reduce their expenses by painting new as well as old Bobbins. A coat of shellac or paint makes old bobbins new—occasional coatings make them last twice as long, and different colors can be used to designate different lots. Machine paints each end different colors, if necessary, at one time. ¶ It can be used for any size Bobbin, Slubber, Speeder or Quill, and for spools up to 12″ traverse, 5″ heads. Each machine and claim made is guaranteed. Send for price and details.

WILSON & CO., BARNSLEY, Ltd.
Barnsley, England
High-Class Mill Bobbins, Plain or Fitted with Patent 'Lockfast,' 'Climax' and 'Simplex' Shields or Protectors

S. HALEY & SON, Ltd.
Cleckheaton, England
Card Clothing for Woolen, Worsted, Cotton and Silk. Patent Balata Foundations, Oil and Waterproof and of Great Tensile Strength, or Ordinary Foundations.

SELAS COMPANY - New York, N. Y.
Works at: Canton, Ohio; Berlin; Manchester; Moscow: Paris
ILLUMINATING and INDUSTRIAL HEATING SYSTEMS
Economies in Lighting from 40 to 80 per cent, and for Heating, Singeing, etc., from 15 to 40 per cent.
ALL INSTALLATIONS FULLY GUARANTEED

SPEED & STEPHENSON
170 Summer Street - - - BOSTON, MASS.
Importers and Manufacturers of Mill Supplies, Specialties, etc., for Worsted and Woolen Mills
Write for Circulars, Plans and Estimates

OPEN NEW CLUB HOUSE

On Wednesday, September 9th, the Cosmopolitan Club of Philadelphia, a club made up of manufacturers of textiles, opened its new Club House and the S. E. corner of 2d St. and Lehigh Ave. The object of this opening was not only to show its members what had been accomplished by an energetic committee in the way of renovating and remodeling the buildings for the needs of the club, but also their many friends who assembled with them to participate at a luncheon which was served from 12.30 to 2.30 P. M. in the dining room of the club.

After the luncheon, Theo. F. Miller, of Stead, Miller & Co., manufacturers of upholstery fabrics, the president, welcomed the members and their guests to their new home. He related briefly the history of the club and stated that it was the aim of the membership to make the organization not purely a dining club, but also to aid in the development and improvement of Kensington, and also to bring about a more thorough cooperation between the employer and employe.

Benjamin F. Anderson, of the Amrein Dyeing Co., addressed the gathering on the merits of the organization and predicted for it a splendid future. He also urged them to give the association their hearty financial support. The membership was increased from 130 to 155 by applications filed by many present.

The atmosphere of the club is decidedly homelike and it affords opportunities for broadening social relations among the members over their noonday meal. It started on Jan. 9, 1914, with the substantial support of the leading firms in the neighborhood, on an established footing in the community. The officers are: President, Theodore F. Miller, of Stead, Miller & Co.; vice-president, Charles F. Bochmann, of F. A. Bochmann & Co., Inc.; secretary, Harry Lonsdale, of F. A. Bochmann & Co., Inc.; treasurer, Sol. Selig, of Moss Rose Manufacturing Co. Board of governors—John W. Snowden, of Stead, Miller & Co.; Charles H. Peirson, of E. F. Houghton & Co.; William B. Palen, of Philadelphia Textile Machinery Co.; John W. Hepworth, of John W. Hepworth & Co.; Joseph Elias, of Moss Rose Manufacturing Co.; Herbert T. Hershey, of Philadelphia Textile Machinery Co.; Arthur K. Marsden.

FACTS AND GOSSIP.

Massachusetts, Monson. At the sale of the plant of the Somerset Woolen Company by Philip G. Clifford, trustee in bankruptcy, the property was purchased by Charles D. Rood, of Springfield.

*Massachusetts, New Bedford. The project to organize a new company to manufacture absorbent cotton, to which George H. Booth and New York men were interested, is held up for the present. Definite plans for establishing a plant were to have been made by September 1 but it is stated now that the matter will be delayed for some time.

Massachusetts, Newton. The Web-Lox Fibre Mfg. Company has been incorporated with capital stock of $50,000 to manufacture fibrous materials, etc. William B. Arnold, of Newtonville, and James A. Butler are among the incorporators. All the shares have been issued, 188 shares being sold for cash, and 4,812 for patent rights.

Massachusetts, North Brookfield. At a meeting of the directors of the Phoenix Linen Company, W. Dean Smith was elected president; Robert Simpson, vice-president; Hubert C. Keith, secretary and treasurer, and Robert Andrews, manager. The directors are considering the building of a new boiler house and a new bleaching department.

Massachusetts, North Chelmsford. Night work will be started in a few weeks by the Lowell Textile Company, manufacturers of union huck towels and crashes. Recently 18 new looms were added. At the Silesia Worsted Mills of the U. S. Worsted Company, many of the departments are running nights as usual.

Massachusetts, North Oxford. It is understood that the company which recently started up the plant of the old Narragansett Worsted Mill has changed its style from the Hewett Textile Company to the Bridgeport Textile Company, and that Harry D. Hewett is no longer connected with the enterprise.

Massachusetts, Plymouth. Business is exceptionally good in the three woolen mills here, all of which are running to their full capacity. The Puritan Mills of the American Woolen Co. are running three nights a week until nine o'clock.

Massachusetts, Springfield. The concern organized during the week under the name of the Ridgewood Mills, Inc., does a business of selling textile goods. They do not manufacture.

Massachusetts, Worcester. A concern has been organized in Worcester under the name of the Worcester Felt Shoe Company with capital stock of $50,000 and lines of felt shoes and slippers will be manufactured in a 2-story factory building on Middle River Road, formerly occupied by the Wachusett Thread Company. Electric power will be used. The new concern will not manufacture its felt, however, but will buy it in the market. Edward A. Robinson, at one time connected with William Filene's Sons Company, Boston, and later with a felt manufacturing concern, is president and buyer. C. K. Pevear, of Newton, is treasurer and superintendent.

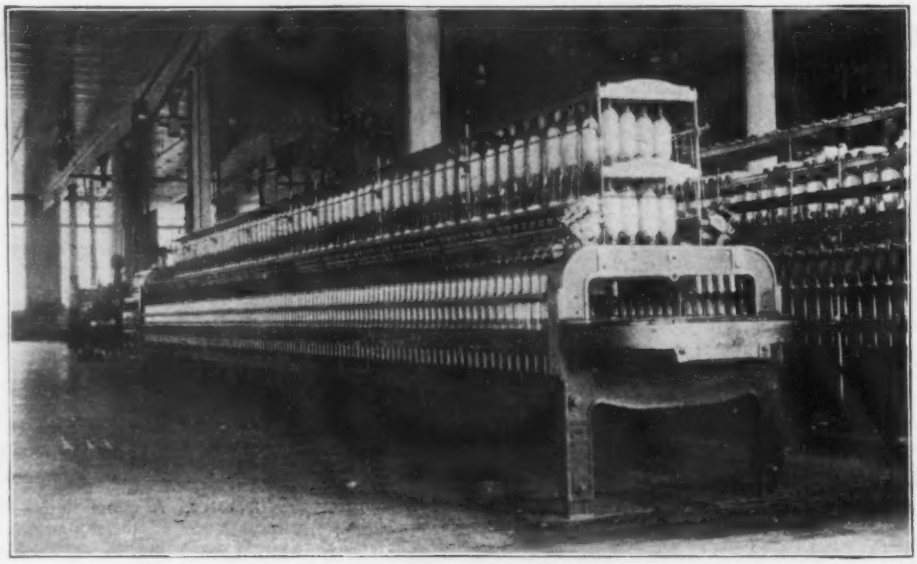
Michigan, Battle Creek. C. G. Schellenberger, currently reported looking for a location for a silk mill to employ several hundred hands, is interested in the Urbandale Land Association which owns a tract of real estate that is being developed. Mr. Schellenberger was given considerable publicity earlier in the year in connection with a woolen mill project.

*Minnesota, Minneapolis. The Sherlock M. Merrill Company, recently incorporated with capital stock of $50,000 by Sherlock M. Merrill of the selling concern bearing his name, and others, will not manufacture at the present.

New Hampshire, Franklin. Property adjoining its plant has been purchased by the Franklin Mills of M. T. Stevens & Sons Company.

THE BROWN SPIN-WRIGHT

Commercial Frame



During a five weeks' test in one of the most modern cotton spinning mills in New England, under mill conditions, the Brown Spin-Wright Commercial Frame demonstrated the efficiency of the steel-band drive for driving spinning and twisting spindles.

For Particulars Address

The Brown Spin-Wright Cotton Co.

32 Union Square, New York, N. Y.

New England Demonstration Office: 1502 Purchase St., New Bedford, Mass.

FACTS AND GOSSIP.

*Connecticut, Staffordville. Nothing has been announced by the Garland Woolen Company as to whether the mill will be rebuilt. This company's plant was wiped out last week by fire with loss estimated at $70,000, covered by insurance. In four years Stafford has lost four woolen mills by fire. The plant of T. F. Mullen & Company was burned with loss of $75,000. Then the Fabyan Woolen Company's plant was burned with loss of $125,000, and this was followed by the destruction of the plant of Frederick Faulkner with loss of $90,000. As in the case of the latest fire at the plant of the Garland Woolen Company, there were indications that the fires at these plants were of incendiary origin.

Connecticut, Stonington. Owing to the breaking of a shaft the quilling and winding departments of the American Velvet Company were recently shut down for a short period. Repairs have been made and the plant is working in full as usual.

Connecticut, Thompsonville. A statement has been issued to stockholders concerning the proposed plan for the consolidation of the Hartford Carpet Corp., of Thompsonville, Conn., and the Bigelow Carpet Company, of Lowell and Clinton, Mass. In substance the plan is that all of the property and assets of the Hartford Carpet Corp. be transferred to the Bigelow Carpet Corp., and it is proposed that the name of the latter shall be changed to the Bigelow-Hartford Carpet Company.

Connecticut, Torrington. The Warrenton Woolen Company has purchased two lots of land on Main St. and now owns the entire strip of property between the east bank of the river and Main St. in front of the factory building. This strip is about 500 feet long. Indigo blue uniform cloths are manufactured on 5 sets and 30 broad looms.

Florida, Pensacola. A movement has been started among local trade bodies to bring cotton mills to Florida as a result of the expected boom in export business with South America and the Orient. The Pensacola Chamber of Commerce has written to a number of cotton manufacturers asking them to consider the matter of establishing plants in Pensacola.

*Georgia, Cedartown. A. E. Young is continuing his efforts to complete arrangements for transforming the old Cedartown Knitting Mill into a cotton yarn plant to be operated under the name of the Peerless Cotton Mills. Details of this project have been given previously.

Georgia, Columbus. The Hamburger Cotton Mills have been reopened after a short shut down and it is stated that other local mills, which were shut down pending a readjustment of conditions, including the procuring of an ample supply of cotton which is now coming in at a low figure have reopened.

Indiana, New Albany. Ground has been broken for the building to be erected by the Mill City Cotton Company, a negro manufacturing concern. The mill will be 1 story, 142 by 142 feet. This project was recently reported from Louisville, and is headed by J. E. Wiley, who has the support of some of the city's prominent business men and the Chamber of Commerce.

Kentucky, Louisville. The H. W. Reese Woolen Company has been incorporated with capital stock of $50,000. The incorporators are Fred A. Reese, A. Weidling, Lewis R. Grall and others.

Maine, Alfred. A night force of operatives has been put on at the Klauber Embroidery Works, manufacturers and finishers of laces and embroideries.

Maryland, Baltimore. William E. Hooper & Sons Company, manufacturers of cotton duck, yarn, rope and similar products, are advertising for weavers.

Maryland, Baltimore. Under the reorganization plan adopted by the bondholders' committee of the Mt. Vernon, Woodberry Cotton Duck Company, a new company is to be organized with capital stock of $13,600,000, of which $8,000,000 will be preferred, and $5,600,000 common stock, to take over the property of the Mt. Vernon Company. It is planned for the new company to be organized without any bonded indebtedness, the present bonds to be exchanged for preferred and common stock of the new corporation.

Massachusetts, Attleboro. It is understood that a movement is on foot among the business men of Attleboro which may result in the continuance of the business of the James Orr Dyeing & Braiding Company under an arrangement with the creditors. The concern was petitioned into bankruptcy in August and schedules which were recently filed showed liabilities of $49,000 and assets of $1,500. The concern conducted a business of manufacturing braids and dyeing and finishing yarns.

Massachusetts, Fiskdale. A representative of Fyans, Frazer & Blackway, machinery dealers of Fall River, was here recently to inspect the machinery remaining in the plant of the Fiskdale Cotton Mills, which were shut down three or four years ago. It was noted recently that the building would probably be used for some purpose other than textile manufacturing.

Massachusetts, Gloucester. The Colby Company has been incorporated with capital stock of $100,000 to manufacture hammocks, cordage, bags, awnings and similar goods. The incorporators are John J. Conway, president; Benjamin H. Colby, treasurer and others. Benjamin H. Colby is a Gloucester sailmaker.

Massachusetts, Lawrence. Henry Bauer, who established a small weaving plant in the Wilson Bldg., 616 Essex St., several months ago, is now operating 12 broad looms on corset cloths, shoe cloths, and novelties. He operates by electric power and sells the product to jobbers.

Massachusetts, Lawrence. The wrecking of the building at the east end of the Farwell Bleachery, to make way for the new central bridge, is going rapidly ahead, and will be finished in a week. The tearing down of the Atlantic Mill on the other side of the river is pretty well completed.

The Complete Hetherington Line of

Cotton Mill Machinery

Is Built in England for the
World's Most Discriminating Manufacturers by

John Hetherington & Sons, Ltd., Manchester, Eng.

There is no War in England

Our shops are running as usual, and we experience no difficulty in making shipments, particularly to United States and Canada.

Owing to the War in Europe and the closing of Continental markets we are able to expedite deliveries of machinery to this country and Canada.

We are out for business and you will find it to your advantage at this time to obtain our specifications and prices for any of your cotton machinery requirements.

Cotton Waste Machinery

Because of the war no cotton waste is being exported to Germany and no cotton waste products are being imported from Germany. Therefore, this is the opportune time to manufacture cotton waste in this country and we can help you to secure your share of this trade.

For years we have made a specialty of both English and German systems of cotton waste machinery and have an intimate knowledge of Continental methods of manufacture.

It is not necessary to experiment with spasmodic inventions or obsolete methods, that have already been rejected by foreign waste manufacturers, when our standardized machinery is available.

OPINIONS OF MERIT EXPRESSED IN ORDERS

By American Textile Mills

72 Nasmith Combers Just Delivered to One of the Largest Hosiery Yarn Mills in This Country.
56 Nasmith Combers on Order for One of the Largest Thread Mills in This Country.
138 Nasmith Combers Working at One of the Largest Tire Fabric Mills in This Country.
74 Nasmith Combers Working at One of the Largest Fine Goods Mills in This Country.

A. S. Fuller, Sole Agent, U. S. and Canada

178 Devonshire St. and 35 Federal St., Boston, Mass.

J. H. MAYES, Southern Agent, Independence Building, Charlotte, N. C

FACTS AND GOSSIP.

Rhode Island, Pawtucket. The Eastern Silk Company has been incorporated with capital stock of $50,000 to manufacture and sell silk, cotton and wool yarns and fabrics. The incorporators are Edward and John Priestley, Willie Roberts and Thomas Barrits, of Pawtucket, and John Wilkinson, of New Bedford.

Rhode Island, Providence. The Colored Worsted Mill, manufacturers of 2/20s to 2/60s worsted yarns on the Bradford system, have put a night shift of hands to work. The recently completed 3-story addition has been put in operation and is running night and day the same as the rest of the plant.

Rhode Island, Providence. Additional looms in the National & Providence Worsted Mills of the American Woolen Company are being started up It is stated that some of this machinery is in rooms that have been idle for nearly two years.

Rhode Island, Providence. Night work has been resumed at the plant of the Howard Braiding Co. of East Providence. A night shift has been employed on several occasions since last January, but about a month ago production caught up with orders and the day force was able to take care of the work on hand. It is now found necessary to put on a night force again. The Union Webbing Company, formerly at Lowell, Mass., will begin manufacturing next week in the building of the Howard Co., as reported in another part of this issue.

Rhode Island, Wakefield. The Wakefield Mills Company have started up the carding and spinning departments and will start the weave room within a week. Arrangements have been made to weave a line of worsteds in addition to the regular lines of woolen goods.

Rhode Island, West Barrington. Improvements are being made in the surroundings of the Rhode Island Lace Works. The town council has been petitioned for permission to grade and lay out sidewalks.

South Carolina, Anderson. Several of the cotton mills of this city and vicinity have vigorously denied that a general curtailment is planned. The manufacturers expect to be busy at least till January 1 and after that date most of the unusual difficulties under which the mills are working will doubtless be removed.

South Carolina, Greenville. Lewis W. Parker in denying the story that the Parker Cotton Mills Company would curtail operations largely, states that 70 per cent. of their mills are sold far ahead of their output and that much of the labor that has been thrown out of work by the curtailment of other mills is being taken care of in the mills that are busy and working overtime.

*South Carolina, Landrum. The production of damask has been started at the Shamrock Damask Mills. Practically all the equipment has been installed and is running. This is a new company incorporated in May, which built a twenty-loom damask weaving plant. J. R. Mallory, formerly superintendent of the Irene Mills at Gaffney, S. C., is the treasurer and buyer.

*Tennessee, Fayetteville. The Elk Cotton Mills have made as yet no definite plans for the proposed No. 2 Mill and they are not sure that anything will be done. It was reported that they would establish a new mill containing 10,000 spindles and 300 looms to weave flat duck and it was understood that outside interests now manufacturing would move to Fayetteville. They have done nothing as yet except to make an investigation into the merits of the project.

Tennessee, Knoxville. Arrangements have been made by the Knoxville Knitting Mills Company, manufacturers of "Knoxknit" hosiery, to open offices in London and Toronto. This concern is also said to be making an investigation of Central and South American markets.

Tennessee, Union City. Harrison Bros., proprietors of the Union City Waterproofing Company, say that they are the inventors of a secret compound for waterproofing which they are placing on the market with the expectation of interesting local capital. A plant for handling and using this product will probably be established. A number of bids have been received from different towns wanting the industry, but they have not decided where they will locate. Harrison Bros. are experienced in the manufacture of oilskin goods, including raincoats, hats, awnings, horse covers, etc. A meeting was recently held at Fulton, Ky., for the purpose of interesting capital in the project.

Texas, Dallas. The Merchants' & Manufacturers' Association is agitating a plan for the establishment of a cotton factory here. Subscription to the stock of the corporation will be payable either in cash or in raw cotton.

Texas, Fort Worth. The local Chamber of Commerce is trying to interest capital in a cotton mill project.

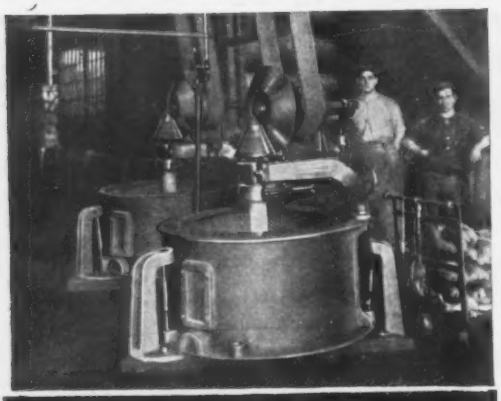
Texas, Gainesville. J. T. Leonard is agitating a plan for the organization of a company with capital stock of $100,000 to build a cotton mill. It is proposed to invest all the cotton that has been purchased by local parties at ten cents a pound in the purchase of stock and a large number of these purchasers have agreed to the plan. Some think that $100,000 will be raised within thirty days.

Texas, Greenville. A project for the organization of a $150,000 cotton mill company is being promoted by W. N. Harrison, C. M. Portwood, J. D. Middleton and others.

Texas, Mexia. The Commercial Club has held a meeting to consider the organization of a cotton mill company and to decide upon methods of raising funds.

Virginia, Chatham. B. F. W. Bryant, of the Chatham Light & Power Company, is interested in a plan to build a small cotton mill some time in the future in connection with the proposed new hydro-electric plant.

Virginia, Danville. Some of the broad looms in the Riverside & Dan River Cotton Mills, Inc., are running nights. Reports that the entire wide goods weaving department is on a night and day schedule are exaggerated.



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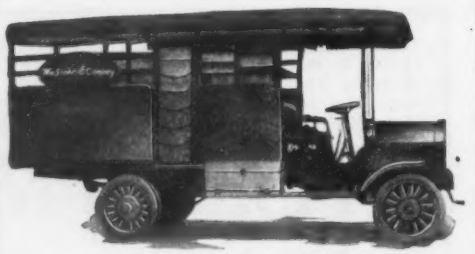

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KNITTING MILL NEWS

Pennsylvania, Bloomsburg. An announcement has been made by Barger, Bains & Munn, Inc., of Philadelphia, that within a few months the dyeing, finishing and packing departments of the company will be moved from Philadelphia to the Bloomsburg Hosiery Mills. During the spring a new branch mill was built at Nescopeck, for manufacturing men's and boys' ribbed hosiery. All buying is done at the Philadelphia office of Barger, Bains & Munn, Inc., Jasper and Adams Sts.

*Pennsylvania, Carbondale. Contract has been awarded by the Carbondale Knitting Mills for the addition recently noted. The new building will be built in the rear of the present plant on Dundaff St. and additional equipment will be installed which will greatly add to the output of the plant. Double shifts of operatives are being employed in getting out their lines of knitted overcoats and other garments.

Pennsylvania, Quakertown. The plant of the Quakertown Knitting Mills Co., which has been shut down for the past two or three weeks, making improvements to the equipment and installing a new heating plant, will be started up again within a few days. They are manufacturing a line of women's seamless hosiery, operating 25 latch and 106 spring needle knitting machines, the production being sold direct.

Pennsylvania, Royersford. Manufacturing has been started in the new underwear plant of the Progressive Knitting Mills. This concern was located in Spring City and last winter purchased a lot opposite the P. & R. depot. During the spring and summer, a two-story building, 52 by 155 feet, was built of modern factory construction. Increased facilities are provided for manufacturing the concern's lines of ladies', children's and misses' ribbed vests and union suits. Ellwood C. Matlack is president and treasurer; Wesley Britton, manager; John Lindauer, Jr., treasurer. The office is located at 122 North 3d St., Phialdelphia.

Pennsylvania, Sellersville. F. E. Munich, a manufacturer of women's fine gauge seamless hosiery at 2720 Hope St., Philadelphia, has leased for six years a factory building on Main St. and it is reported will move his business here from Philadelphia. It is also stated that a new process of hosiery manufacturing is to be installed.

Tennessee, Loudon. Bids for the construction work of the new one-story-and-basement addition to the plant of the Loudon Hosiery Mill, are being invited and the contract will be awarded within the next two weeks. This enlargement will be 62 by 168 feet. The Loudon Hosiery Mills manufacture women's seamless and children's and infants' cotton hosiery. R. H. Bell is president, and C. H. Bacon, treasurer and buyer.

*Tennessee, South Pittsburg. The dyeing and finishing department added to the plant of the Aycock Hosiery Mills has been completed and some other enlargements and improvements in other departments have been carried out. The Aycock Hosiery Mills manufacture women's ribbed and infants' and children's cotton hosiery on 100 latch needle knitting machines and 205 ribbers. R. C. Aycock is president, treasurer and buyer.

Vermont, Bennington. Some repairs at the plant of the Cooper Manufacturing Co. have been completed and manufacturing has been resumed. The changes include an overhauling of the dye house and setting up of some new drying machinery.

Wisconsin, Delavan. The new yarn department of the Bradley Knitting Company has been equipped with two 60 inch cards and complementary wool spinning, twisting and spooling machinery. This new department is on the third floor of the warehouse building.

*Wisconsin, Mauston. Construction work has been started on a new building for the Portage Hosiery Company and it will be completed and equipped during November. This enlargement will allow the capacity to be doubled and the equipment will be brought up to 2 sets of cards and 50 knitting machines for making woolen yarns, men's hosiery and mittens. This is a branch of the Portage Hosiery Company at Portage, and all buying is done at the main plant. J. M. Stickler is superintendent at Mauston.

Mills Starting Up.

New York, Walton. After an idleness of several weeks the mill of the Southard Knitting Company will start up shortly. The Southard Knitting Company took over the plant of the White Rock Knitting Mills Company and it has recently been reported contemplated the removal of the plant to another location. This idea has been abandoned presumably as a new smoke stack has been erected and some improvements made in the mill.

*Pennsylvania, Boyertown. The new No. 2 Mill being established by the Allen Knitting Mills Company, of Philadelphia, will double their output. Manufacturing will be started some time this month making lines of ladies' union suits and vests. All buying will be done at the Philadelphia office, 11th and Westmoreland Sts.

Pennsylvania, Nazareth. Fred Wunderly, Robert M. Getz and O. D. Shafer have organized the Nazareth Hosiery Company, Inc., with capital stock of $15,000. Mr. Wunderly purchased the Nazareth Knitting Mills, formerly operated by M. H. Kessler, several weeks ago, and his new corporation will start up the mill. Thirty-three latch needle knitting machines and 160 sewing machines are operated on misses' and children's cotton hosiery. Mr. Wunderly, who operated this mill about six years ago, will be president and general manager; Mr. Getz will be secretary and treasurer. The product will be sold direct.

ORDER SET ASIDE

We are informed by the John H. Giles Dyeing Machine Co. that in an action between Charles H. Duell, president of the Klauder-Weldon Dyeing Machine Company, et al, and John H. Giles, president of the John H. Giles Dyeing Machine Company, an order previously obtained by Duell from Justice Mills of the New York State Supreme Court was set aside September 26 by Justice Morschauser of the New York State Supreme Court at Poughkeepsie, N. Y.

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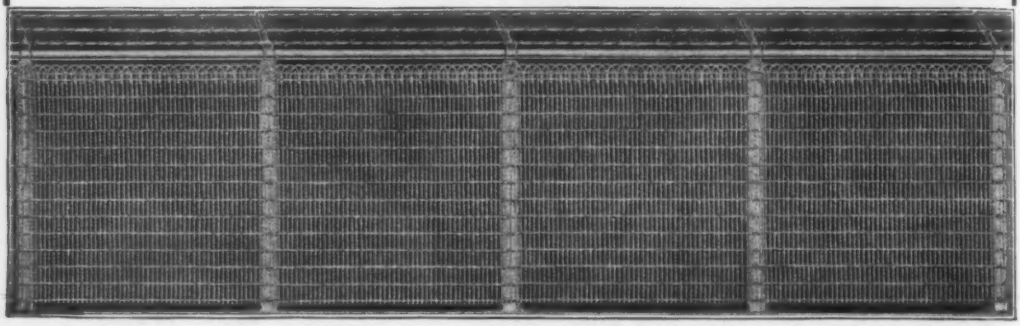

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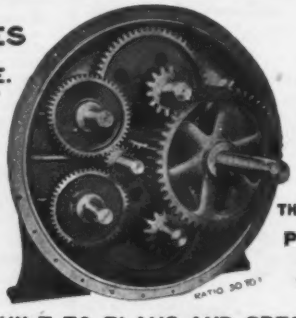

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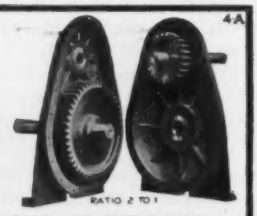

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FACTS AND GOSSIP.

*Alabama, Gadsden. The Smith-Echols-Burnett Hardware Company is interested in the hosiery knitting mill project recently noted. The proposed new industry may occupy a building on Court St., formerly used by them.

Canada, Ontario, Hamilton. The proposed additions to the plant of the Chipman-Holton Knitting Co., Ltd., have been postponed indefinitely.

*Canada, Ontario, Kincardine. William Mitchell, who was reported to be interested in establishing a small knitting plant for the manufacture of wool half hose, is advertising for a partner with a small amount of capital to take charge of the manufacturing end of the business.

Canada, Ontario, Toronto. Samuel Tease has begun the manufacture of sweaters, jerseys and fancy worsted knit goods in a small plant at 917 Lansdowne Ave.

Canada, Ontario, Woodstock. According to a local report the Oxford Knitting Company plans to purchase the woolen knitting plant of the Shawinigan Knitting Co., Ltd., of Shawinigan Falls, Que., and remove it to Woodstock. It is said the purchase will be made if the city will lend the Oxford Knitting Company $50.000, the principal and interest to be repaid to the city in thirty equal annual installments. If this loan is made they guarantee to employ at least 400 hands for eleven months of the year during the term of the agreement. The proposition is being considered by the City Council and will probably be submitted to the taxpayers shortly.

*Delaware. Newcastle. Little has been learned of the new knitting mill project. Vice-president Patrick McGrory, of the Board of Trade, has called a meeting to consider the project and offer the encouragement necessary to bring the plant here. As noted in a previous report the knitting company desires to rent the upper floors of the building known as Red Men's Hall with the option of purchasing the building later.

Georgia, Gainesville. A. C. Meldrum plans to establish a hosiery plant here.

*Indiana, Richmond. The new mill of the Indianapolis Glove Company, now being completed, will cost $34.000. The present branch plant at Richmond will be abandoned when the new mill is ready for occupancy. The main plant is at Indianapolis. They manufacture cloth and jersey gloves.

*Massachusetts, Holyoke. The project to establish a silk hosiery plant in Holyoke headed by James Parfitt, which was agitated about six months ago, has been dropped. Mr. Parfitt states that they failed to get a capable man to run the business and therefore the whole matter was abandoned.

*New Hampshire, Nashua. A. Caron, previously reported establishing a small knitting business at 15 Gilman St., is not ready as yet to begin business. He will manufacture woolen mittens, gloves, stockings and sweaters under the style of A. Caron Knitting Works.

New Jersey, Dover. The plant of Paul Guenther, Inc., manufacturer of men's and women's fashioned silk hosiery, has resumed full time operations. This affects about 800 employes who have been working part time for several months.

New York, Brooklyn. Halperin Bros., Inc., have been granted a charter with capital stock of $10,000. A concern known as Halperin Bros. manufactures knitted ties and fancy knit goods at 74 Broadway.

*New York, Fultonville. Manufacturing has been started by the new Weeper Mfg. Company with three knitting looms on glove fabrics. The organization of this company with capital stock of $30,000 was recently noted. Gordon S. Weeper heads the project.

New York, New York City. A charter has been granted W. O. Horn & Bros. to manufacture hosiery, neckwear and clothing, with capital stock of $400.000. This concern succeeds W. O. Horn & Bro., dealers in silk hosiery, neckwear and clothing and it is understood will not manufacture.

*New York, Valatie. Dexter W. Stark is president, and Winthrop H. Moore, formerly of the Colonial Knitting Co., Ltd., of Guelph, Ont., is treasurer, agent and buyer of the reorganized Adhesive Gimp Mfg. Company, manufacturers of silk furniture gimps, sweater coats and fancy knit goods.

North Carolina, Valdese. The Waldensian Hosiery Mill has been incorporated with capital stock of $125,000, by Francis Garrou, J. L. Garrou, Henry Garrou, Albert Garrou and F. Perrou. The new corporation succeeds the Waldensian Hosiery Mill now operating here on ladies' and men's seamless hosiery, with a branch known as No. 2 Mill at Hildebran. No changes will be made.

Pennsylvania, Bethlehem. The plant of the Jewell Knitting Co., Inc., on South Main St., operating 14 knitting and 30 sewing machines on women's underwear, it is reported has been sold out at public sale, the company being no longer in existence.

Pennsylvania, Philadelphia. The Albert Knitting Mills, S. M. Witz, proprietor, located at Lens and Armat Sts., Germantown, where they manufacture sweaters, cardigans and bathing suits, on 43 knitters and 20 sewing machines, are disposing of the equipment of the sweater department and in the future will manufacture a line of bathing suits only.

Pennsylvania, Philadelphia. Vincente Perez Blanco of San Juan, Puerto Rico, has recently purchased a number of knitting machines which he is installing in his plant for the manufacture of a line of seamless hosiery.

Pennsylvania, Philadelphia. The Nu Idea Knitting Co. has been granted a charter with a capital of $50,000 under the laws of Delaware. The company is operating a number of knitting machines on knitted silk ties and hosiery at 2709 N. Palethorp St., John L. Sutphen being one of the proprietors.

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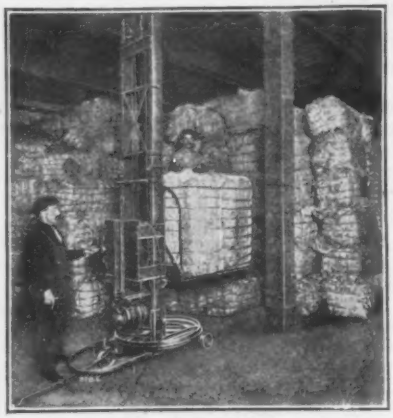

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FACTS AND GOSSIP.

Oklahoma, Muskogee. W. S. Wiley, of the Publicity Committee of the Southern Commercial Congress, states that several manufacturers are considering Muskogee as a location for a cotton and bankers was recently held to further the plan mill and that it is his opinion that with the proper inducement there will be no trouble in getting a cotton mill to locate here.

*Oklahoma, Tulsa. There is some talk of breaking ground for the plant of the Inez Mfg. Company, recently incorporated under the laws of Delaware, with capital stock of $2,500,000. From information that has been received from George R. Salisbury, of Lake Winola, Pa., who heads the project, he will arrive in Tulsa shortly with plans for going ahead with the construction work. The site of the projected new plant is at Sand Springs where Charles Page, one of the men interested, has given a twenty-acre plot. It is planned to erect several large buildings to cost about $250,000 and to install equipment which has been mentioned as including 100,000 spindles and 2,500 looms.

*Oregon, Portland. Before the outbreak of the European war the Multnomah Mohair Mills at Sellwood were shut down with the idea of moving the machinery to China to take advantage of the cheap labor there. At the present time the mill is still closed, but they are waiting developments before making any plans for the transfer of the machinery and it is said there is a possibility that the plant will be started up again.

*Pennsylvania, Chain. Some weeks ago we published a report that Howard F. Mills was contemplating the establishment of a bedding, mattress and rug mill at this place. Further investigation leads to the conclusion that there is nothing in this proposition that would be likely to materialize or warrant following up.

Pennsylvania, Chester. The Providence Worsted Mills, operating 40 broad looms on dress goods, men's wear and cloakings, it is reported have discontinued operations and the building occupied by them has been taken over by other parties.

Pennsylvania, Chester. The Nelson Spinning Co. are removing their plant from 11th and Walnut Sts. to the Irving Mills at 25th St. and Ridley Creek. They manufacture woolen and merino yarns which they sell direct through H. R. Shirley, Philadelphia.

Pennsylvania, Clifton Heights. Another large government contract for uniform cloth, meltons, shirtings and blankets has been received by the Thomas Kent Mfg. Company and the mills are being put on a night and day schedule. At present the mills are busy on government contracts previously awarded and with this new order, which is one of the largest they have had, the full operation of the plant is assured for over a year.

Pennsylvania, Mercer. The Mercer Silk Mills have been granted a charter with capital stock of $35,000 and it is understood will take over and start up the Mercer Silk Mills of this place which have been operated by Harry F. Zweifel. The plant contains 40 looms, operated on broad silks.

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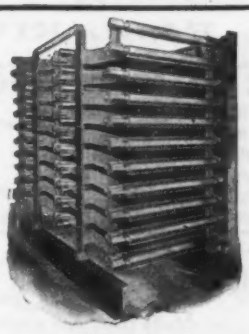

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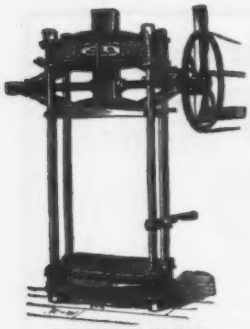

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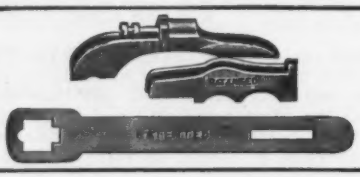

FACTS AND GOSSIP.

New York, New York City. The American Exporters' Alliance has been organized with capital stock of $250,000 by Augustus Frank, Bayonne, N. J.; Robert S. Duboise, 234 Vandewater Ave., N. Y., and others.

*New York, New York Mills. The New York office of Alexander F. Hobbs, president of the Oneida Bleachery, Inc., which recently took over the converting plant of the New York Mills, is at 320 Broadway. The concern has capacity of 25 tons daily.

New York, Plattsburgh. There is some agitation for the establishment of a textile manufacturing industry in Plattsburgh.

New York, Utica. A concern known as the Central New York Rug Company has begun manufacturing in the mill formerly occupied by the Supreme Underwear Mills on Lafayette St.

New York, Yonkers. Alexander Smith & Sons Carpet Company have paid out $75,000 in bonuses to employes, this amount being a certain per cent. of employes' earnings for the six months ending June 30. At present it is said the mill is handicapped by a shortage of dyestuffs.

North Carolina, Roanoke Rapids. At the Patterson Mills Company it was stated that the outlook for the future is much improved. The Patterson Mills have been operated four days a week but the management is now considering running the mill full time again to take care of increased business.

Oklahoma, Antlers. A meeting of business men for the erection of a warehouse. It was decided to put up a warehouse and a committee was appointed to secure a site and raise funds.

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Where FLUID oil is used to lubricate bearings the waste from leakage and the waste from stains on fabrics soon assume alarming proportions. You can stop this waste and economize your oil bills by the constant use of—

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This efficent lubricant, being of non-fluid consistency, **stays where put** and lubricates perfectly to the last small particle. Used instead of fluid oils, and greases, it will make your machinery more efficient as well as decrease your operating expense. Futhermore, it will not spatter and stain yarns and fabrics.

Write today for full information and FREE samples.

New York & New Jersey Lubricant Co.

165 Broadway, New York,
1430 Michigan Ave., Chicago.

SAVOGRAN

Cleans Wool, Floors, Anything

INDIA ALKALI WORKS, - BOSTON

OAK TANNED LEATHER BELTING

—AND—

PICKER AND ROLLER COVERING LEATHERS

CHARLES BOND CO., 520 Arch St., Philadelphia

Students Cotton Spinning

By NASMITH

Price $3.00. Express prepaid

FOR Student and Manufacturer. Covers all operations from ginning through ring and mule spinning.

600 pages, 600 illustrations, drafts, plans, etc.

Lord & Nagle Co., Publishers, Boston

SPOTS

oil, grease and other mill stains quickly and permanently removed by the Sanitex Process. Machines installed in Textile and Knitting Mills, or Spotting done for the trade at reasonable rates.
The Sanitex Co., 33 Union Sq., N. Y., Dept. A.

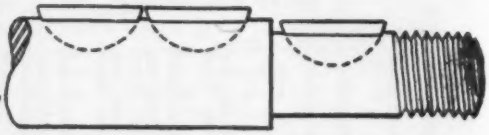
ARABOL MANUFACTURING COMPANY

100 William Street, New York

Sizing, Stiffening, Softening and Finishing Compounds, Glues, Gums, Dextrines, Starches, China Clay, Bone Size and Grease, Soap, Tallow, Weighteners

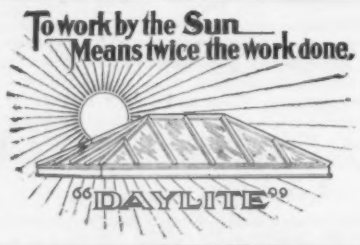
EVERYTHING IN SIZINGS, Etc. SAMPLES MATCHED. HIGH GRADE GOODS

Key Seating Attachment
FOR
Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,
19 Oak Street, New London, Conn.



Van Noorden Skylights
ADMIT DAYLIGHT NOTHING ELSE
Applicable wherever daylight is desired.
Send for Catalogue
E. Van Noorden & Company
100 Magazine St., Boston, Mass.

FOSTER SUPERHEATERS

Installed in any type of boiler without change in setting. Uniform superheat guaranteed.

Power Specialty Company,

BOSTON: 50 Congress Street **NEW YORK: 111 Broadway.**

Important Improvement in Worsted Spinning.
THE BAMFORD DUST PROOF and SELF-LUBRICATING SPINDLE TUBE
saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Providence, R. I.
ALSO MFRS. OF
STEEL CAPS AND SPINDLES. **Caps, Flyers, Tubes, etc., Repaired.**

B I C
TRADE MARK
BARBER-COLMAN COMPANY
MAIN OFFICE AND FACTORY
ROCKFORD ILL
BOSTON, MASS. GREENVILLE, S. C.
HAND KNOTTERS AND WARP TYING MACHINES

Arlington Machine Works
TEXTILE FINISHING MACHINERY
ARTHUR BIRCH, Proprietor **Arlington Heights (near Boston), Mass.**

FACTS AND GOSSIP.

Pennsylvania, Philadelphia. Thomas E. Brown, of Thomas E. Brown & Sons, 2nd and Westmoreland Sts., manufacturers of men's, women's and misses' full fashioned and seamless hosiery, in discussing business conditions states that his business has increased threefold during the month of August over the previous month and a steady increase is noted from day to day.

Pennsylvania, Reading. The business of the Glasser Hosiery Company will be incorporated under the style of the Glasser Hosiery Mill with capital stock of $50,000. Edward Glasser will be president and treasurer; Wilfrid Gray, secretary, and Edmund L. Darlington will be a director.

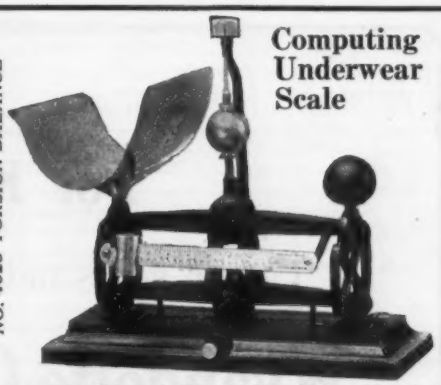
Pennsylvania, Reading. Irwin Binkley, 1040 Oley St., plans to install a few hosiery knitting machines for the manufacture of a line of ladies' goods.

Pennsylvania, Reading. More help is required by the H. V. Wentzel Knitting Mills, 753 Cherry St., manufacturers of men's, women's and children's vests and union suits. Advertisements are being run in labor centers.

South Carolina, Anderson. The Anderson Chamber of Commerce is negotiating with two hosiery mills in an effort to induce them to come to this city. One of the mills is said to be located in New York State and the other in North Carolina.

Tennessee, Rossville. The Richmond Hosiery Mills have put some of their departments on a night and day schedule to take care of the large volume of business that is now being received. Garnett Andrews, of Chattanooga, Tenn., the treasurer and general manager, is quoted as stating that the unsettled conditions are fast being calmed down and business is resuming its natural course.

*Wisconsin, Milwaukee. There will be no immediate increase at the plant of the Columbia Knitting & Mfg. Company as a result of the recent increase in the capital stock from $100,000 to $125,000.



Computing Underwear Scale

Place suit in holder and slide weight on beam until scale balances. Slide weight indicates weight per suit up to 3 lbs. by 1-4 ounce and per dozen to 36 lbs. by 1-4 pounds.
Ask for No. 4025 TORSION BALANCE.

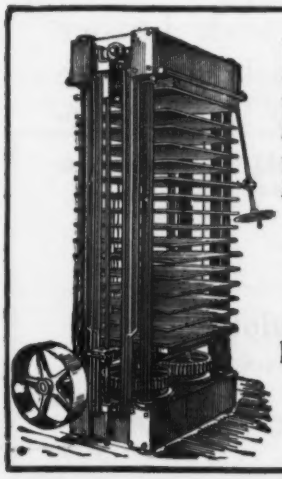
THE TORSION BALANCE COMPANY
Factory, Jersey City, N. J. Office, 92 Reade St., New York

Vulcan Fibre Roving Can.

BODY—Vulcanized Fibre. SIDE SEAM—Riveted with patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation; Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one half pound per inch diameter. SIZE—All cans to any exact size, perfectly round any true. DURABILITY—Superior to any other can.

Also Manufacturers of
HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

James Hill Manufacturing Co., Providence, R. I.



Reliance Hot Plate Press

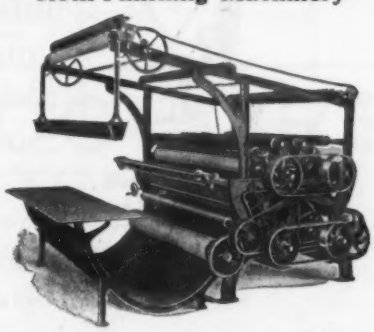
For Hosiery and Underwear Trade

For price and particulars address

Reliance Machine Works

Hedge and Plum Sts.
Frankford, Phila., Pa.

Wool Burring and Picking Machinery
Cloth Finishing Machinery



Worsted Sanding and Polishing Machine

Curtis & Marble Mch. Co.
WORCESTER, MASS.

For Kier Boiling

Cotton yarns and cotton goods of all kinds

Wyandotte Concentrated Ash

gives results far superior to those obtained by the use of caustic or soda ash.

The reason why Wyandotte Concentrated Ash produces such superior results is easily apparent. First, because of its purity, its freedom from iron and other insoluble matter, and its harmless nature.

Second, because its active properties easily remove all gums and other matter from the goods.

Order from your supply house, and write us if you wish further information. Also ask us where you can successfully and profitably use Wyandotte Textile Soda.

The J. B. Ford Co., Sole Mfrs., Wyandotte, Mich.

This Soda has been awarded the highest prize wherever exhibited.

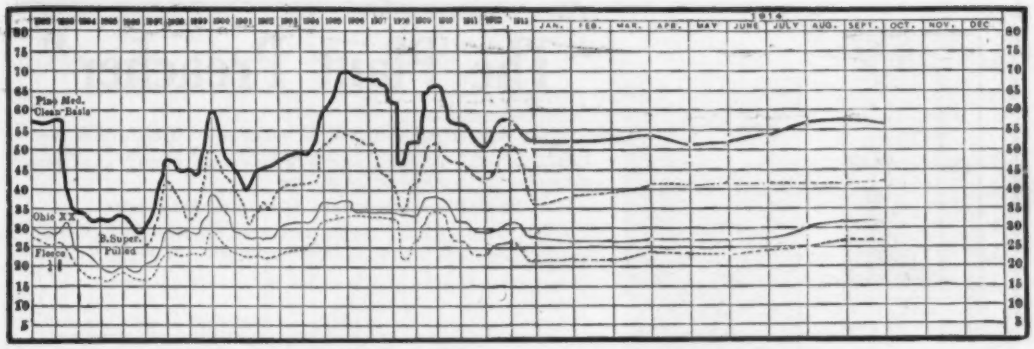


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

THE WOOL MARKET

The wool market in different countries each present their own peculiar situations. The demand for army goods abroad has strengthened the market for coarse wool suitable for such cloths. Crossbreds also share in this movement, whereas fine merinos are depressed, owing to the fact that so large a part of the merino clip has been used in continental mills which are now stopped owing to the war. Advices from Australia are to the effect that fine merino on the first of October was offered 25 per cent. below June prices. Domestic buyers are having a fair business and are using a large quantity of wool. They have made attempts to buy at lower prices, but dealers have refused to sell at concessions. The lower prices quoted in Australia and the Argentines apply only to those countries, as ocean freight, insurance and other charges are much higher and offset to a large extent the local decline. Very few sales of wool have been made as the manufacturers profess to believe that a decline in wool values is unavoidable. The situation is very much mixed and it is impossible even for the best informed in the trade to determine what the future developments will be.

WOOLEN.

New Mills.

*New York, Watertown. It is reported that a company will be formed under the name of the Woolen Products Company, Inc., with capital stock of $30,000, to manufacture blankets out of waste stock under a patent secured by Max Stabinsky, of J. Stabinsky & Sons, proprietors of the Watertown Paper Stock Company. Associated with Mr. Stabinsky will be John H. O'Brien, Dr. C. M. Rexford, Jacob Baker and Jacob Stabinsky. In connection with the enterprise a new mill will be built especially designed for the manufacture of bed and horse blankets, robes, etc. It was noted in March that J. Stabinsky & Sons were interested in a shoddy and blanket mill project.

.....

Enlargements and Improvements.

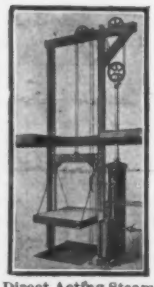
Connecticut, Elmville. A new turbine water wheel has been ordered by the Sonnhill Worsted Company and will soon be installed. This concern succeeded the Elmville Company, and manufactures fancy worsteds and piece dyes. P. E. Meissner is the agent.

Connecticut, Mystic. Extensive improvements are being made in the plant of the Mystic Woolen Company, manufacturers of fancy cassimeres, unions and flannels. John Kennedy is superintendent.

TETRAZO COLORS
FOR COTTON

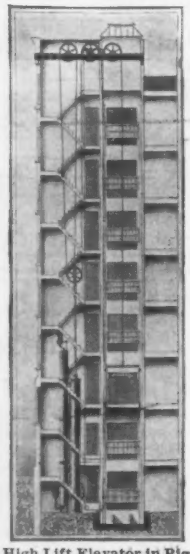
We offer these products in all shades for the dyeing of cotton in any form. Among them will be found colors specially adapted to meet the various requirements of fastness to light, washing, cross dyeing and fulling.
Shade cards and samples, with full information, cheerfully furnished on application.

AMERICAN DYEWOOD COMPANY
NEW YORK PHILADELPHIA BOSTON HAMILTON, ONT.



Direct Acting Steam Hydraulic Elevator

Double Geared Steam Hydraulic Elevator



High Lift Elevator in Big Factory in Jersey City

"The Plant Preacher"

Is a new profession—

He is a man of many languages whose duty it is to join the Hunkies, Dagos and other foreign laborers at lunch and other favorable times in the Great Manufacturing Plants and tell them about taking care of themselves.

The "Plant Preacher" Preaches Salvation

Salvation from dinkey engine, salvation from the flying belts, salvation from the whirring wheels, salvation from their own ignorance.

"Safety First" preachers; such are these useful men.

But say!

The most polyglot "Plant Preacher" that ever mixed gibberish, the most eloquent "Plant Preacher" that ever waved his mouth

Would not save your workmen from that old Mankiller Elevator that rattles and bangs away out there in your plant.

"Safety First"—bah!

MONEY FIRST is your motto.

Just wait until the lawyers get hold of you and nowadays it is no longer "damages" or "compensation"—

It is manslaughter and jail.

You couldn't run your present elevators a day if your state had any decent elevator inspection.

Repent—

And make your plant safe and decent by

"Hookin' 'er to the Biler"

Craig Ridgway & Sons Co.

COATESVILLE, PA.

ELEVATOR MAKERS TO FOLKS WHO KNOW

! WAR EXTRA !

We take this means of assuring our friends that there will be no advance in our price to them of

PEROXIDE

THE ROESSLER & HASSLACHER CHEMICAL CO.

NEW YORK, N. Y.

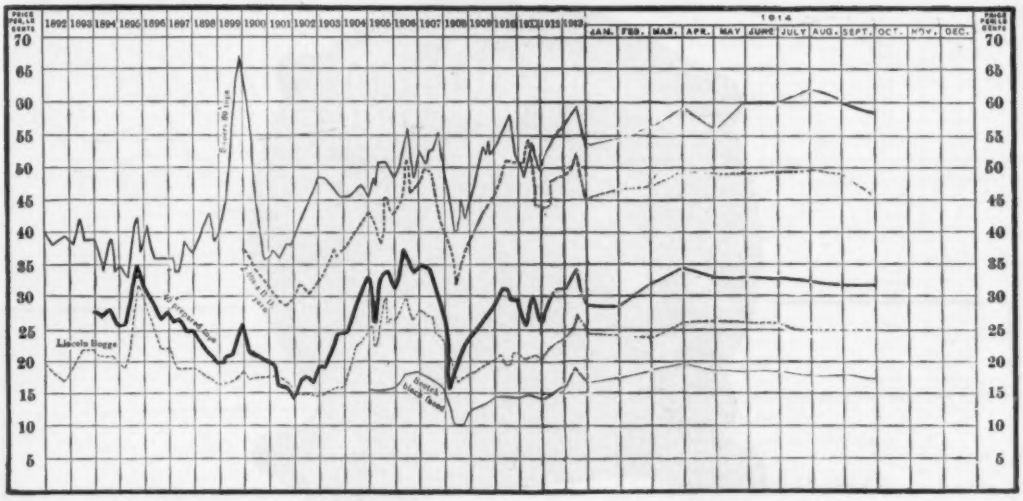


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS, AND WORSTED YARN AT BRADFORD, ENGLAND

THE BRADFORD MARKET

Bradford, Eng., Sept. 26, 1914.

No transactions of any moment can be recorded other than those arising out of the clothing of the troops. The large demand for army cloth has maintained the lower crossbreds at a steady price and the demand for army knit goods has told in favor of fine crossbreds suitable for hosiery. Merino tops have fallen 8 cents since the opening of hostilities and a certain amount of business has been put through on this basis. Prospects of the consumption of merino begin to improve in view of inquiries for yarn capable of replacing Continental makes, but a firm level of values will hardly be found before the opening of the sales in London, due October 7. The quantity available for sale has been unexpectedly increased by 30,000 bales diverted from the Continent.

The shortage of yellow dyestuff and the urgency of the military needs has led to the purchase of 20,000 pieces or more of 18-ounce blue worsted serge in the open market. This has relieved worsted manufacturers temporarily and will facilitate the running of their mills.

A demand has sprung up for buntings to make which Lincoln wether wool is wanted. Some English qualities have been taken for the khaki trade, but the offtake of English mills is small for the present. Large quantities of English sorts bought for the United States market are hung up awaiting a more favorable rate of exchange.

The general tone continues to improve and business is not expected to grow worse henceforward. In view of the difficulty of getting advances from the banks the decision to hold an October sale in London creates resentment, especially among dealers and topmakers, who may have to face a loss upon their holdings. The holding of the sale is apparently dictated by the need to establish a basis upon which business in the new Australian and South American clips can be financed.

The embargo upon the export of silk noils is still in force and it is learned from the Customs that none have been allowed to pass.

WOOLEN MILL NEWS

*Massachusetts, Rochdale. The new weaving mill of E. G. Carlton & Sons has been finished and dedicated by a dance for the mill employes and their friends. This building is 160 feet long, by 60 feet wide, of modern design. Machinery is being moved in from the two old weave rooms and other new looms will be added to the equipment, all to be run by individual motors. A locker will be provided for each employe and other arrangements made for the comfort and convenience of the help. The yarn department will probably be increased to occupy some of the space in the old weave rooms from which looms are being moved.

New York, Gloversville. E. S. Parkhurst Co., Inc., have been granted a charter with capital stock of $200,000. The incorporators are Edward Parkhurst, Harlan P. Shutts and Frank Burton. The shoddy mill of E. S. Parkhurst & Company was destroyed by fire about six weeks ago and plans have been made for building a modern reinforced concrete plant on the old site. Probably two buildings will be erected in place of the five buildings which comprised the plant before the fire. Fourteen sets of cards and four pickers were operated on shoddy. E. Parkhurst and A. P. Souls are the buyers.

Competitive Tests sold 750 of these

Westinghouse Electric Loom Motors

During the Month of August, 1914

Their SPECIAL FEATURES are

Waste-packed bearings.

High efficiency and power factor.

Starting torque adapted to the driven machine.

Westinghouse Electric & Manufacturing Co.

EAST PITTSBURGH, PA.

BOSTON
Boston Safe Deposit and Trust Building

NEW YORK
165 Broadway

PHILADELPHIA
North American Building

CHARLOTTE
American Building

ATLANTA: Candler Building

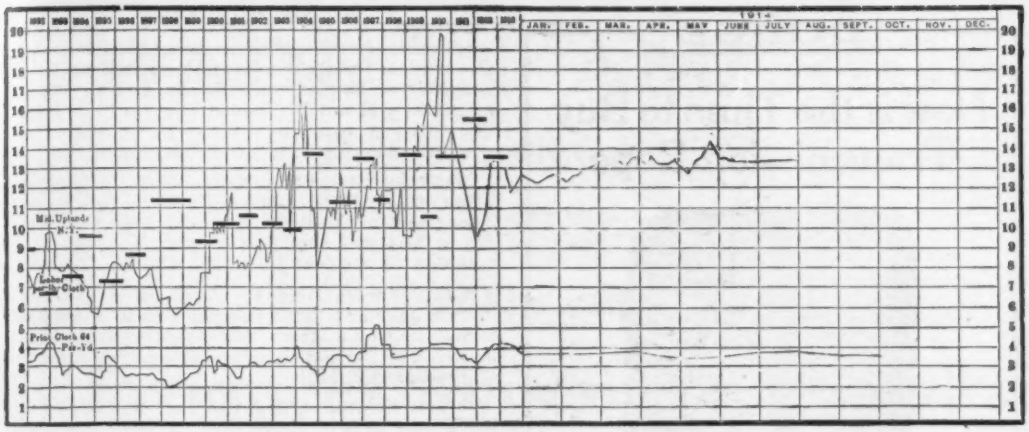


CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

THE COTTON MARKET

There is no speculation in cotton futures owing to the exchanges being closed and there has been a very small trade in spot cotton. The transactions in spot cotton in the South have been made at prices varying from 7.90 to 8.50 cents, 8 cents being the price on September 30. The progress made in restoring facilities for international exchange is one of the most important features of the situation. English mills are in a position to use a large quantity of cotton as soon as exchange and transportation facilities are provided. The "buy a bale of cotton" movement is also helping the cotton market and it is believed that the arrangements made by the government to facilitate bank loans on cotton has been another important factor in preventing a decline. It is estimated that 500,000 bales of cotton have already been purchased under the "buy a bale" plan. The Liverpool price for spot cotton on September 30 was 1c 1/2 cents, basis middling. The movement into sight from August 1 to September 25 is reported by the Chronicle for 1913 and 1914:

Year	Bales
1914, Sept. 25	873,958
1913, Sept. 26	1,913,673

The same authority estimates the world's visible supply of cotton on September 25 at 2,850,892 bales, as compared with 2,540,051 bales on the corresponding date in 1913, 2,673,485 bales in 1912, and 2,272,554 bales in 1911.

COTTON MILL NEWS

*North Carolina, Gastonia. Machinery for the enlargement and improvement of the Gastonia Cotton Mfg. Company's plant, which it was noted several months ago would be installed, is now being received. This equipment is understood to include 5,000 ring spinning spindles and 2,000 twister spindles. A large amount of old machinery is to be thrown out.
30s to 40s cotton yarns are manufactured.

*North Carolina, Mount Holly. The new machinery being installed by the Woodlawn Mfg. Company includes new improved combers, ball warpers, wet twisting machinery and some additional winding spindles for making 30s to 40s combed yarns. C. E. Hutchison is president and treasurer; J. M. Springs is vice-president, and J. W. Holland, secretary.

North Carolina, Fayetteville. The Holt-Williamson Mfg. Company has installed cone winders and changed over its product from weaving yarns to high grade knitting yarns.

South Carolina, Rock Hill. The Arcade Cotton Mills are enlarging their cotton warehouse to hold 800 more bales. They are also making a number of minor improvements about the mill property.

.....

Mills Starting Up.

North Carolina, Mariposa. More carding machinery is being installed in the Mariposa Mills and it is expected manufacturing will be started at an early date. The plant has been idle for over a year. It was purchased several months ago by John J. Ormand and Charles A. Davis, who plan to start it up on 20s single and 2 ply cotton yarns.

MANUFACTURERS OF
WEIMAR BROS. Cotton Mercerized Tapes
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES
Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.

DODGE

Now is the Time to Buy Transmission Rope

DODGE "Firmus" Manila Transmission Rope is made exclusively from fibres imported from the Philippine Islands.

On account of the conditions brought about by the European war, and the great risks attending all overseas shipments, the importation of this Manila fibre will unquestionably be greatly reduced, and possibly it may be entirely cut off.

A shortage of fibre already exists in this country, and an increase in price of rope has naturally followed the increased value of the fibre. So far the effect of the shortage has been to simply increase the price; it is not unreasonable to believe that, unless relief is offered soon with respect to our fibre importations, there will exist in this country a positive rope famine, at least so far as the higher grades are concerned.

You should protect yourself against possible serious embarrassment by placing an order now for new rope, which can be held in reserve stock by you.

Prices can only be quoted by wire and made subject to immediate acceptance in like manner.

Dodge Manufacturing Company

Dodge "Firmus" Manila Transmission Rope

Office and Works

Mishawaka, Indiana

Branches and Agencies in All Principal Cities

COTTON MILL NEWS

*Maine, Augusta. The new hydro-electric power plant for the Edwards Manufacturing Company, for which plans and specifications have been prepared, will not be erected this year. A building, 60 by 40 feet, one story high, is to be constructed and 1,800 h. p. will be developed.

Massachusetts, Fall River. New boilers are being installed and increases made in the power department of the Richard Borden Mfg. Company. No. 2 Mill was shut down a few days ago as a result of an accident to the fly wheel.

Massachusetts, Holyoke. A new filter plant has been installed at the American Thread Company. It was noted in March that improvements would be made in the bleaching and dyeing departments of the Merrick Mills.

*Massachusetts, Millbury. The shut down at the Cordis Mill of two weeks has been extended to one month as this amount of time will be required to move machinery from the old mill buildings into the new building and to complete the rearrangement of the equipment. The male employes who desire to work are given employment on the improvements in progress. As noted in previous reports, additions have been constructed which more than double the plant and will increase the number of employes from 110 hands to approximately double that number. The new buildings include a 3-story addition, 290 feet long, and 82 feet wide, and a 2-story extension from this new building to the cotton storehouse and picker room for the purpose of eliminating the unnecessary handling of the cotton. The new equipment includes 9,000 ring spindles and 245 looms with necessary preparatory machinery. Fred W. Moore is agent and buyer.

Massachusetts, North Adams. During the week 100 new looms have been set up in the Hoosac Cotton Mills, replacing old looms.

New Hampshire, Manchester. According to report, work is to be started at once on a new bag mill by the Amoskeag Mfg. Company, to take the place of the old mill now in use. The new mill will be built on the site of the present one just north of the McGregor Bridge. It is stated the new mill will be 2 stories high, 500 by 125 feet, of brick.

New Hampshire, Manchester. Work has been started on the construction of a new power plant for the Stark Mills, owned by the International Cotton Mills. A number of 300 h. p. boilers will be installed and the new building will be constructed so that a further enlargement can readily be made. In connection with the new power plant a smoke stack 220 feet high will be erected.

North Carolina, Asheville. Further enlargements and improvements are planned by the French Broad Mfg. Company. It is proposed to add a spinning mill to the present quilt weaving mill and according to one report, an expenditure of about $250,000 is contemplated. The French Broad Mfg. Company makes crochet, satin and Marseilles quilts. Late in 1913 the authorized capital stock was increased from $250,000 to $575,000 and more recently a number of new jacquard looms were installed.

MADE IN AMERICA

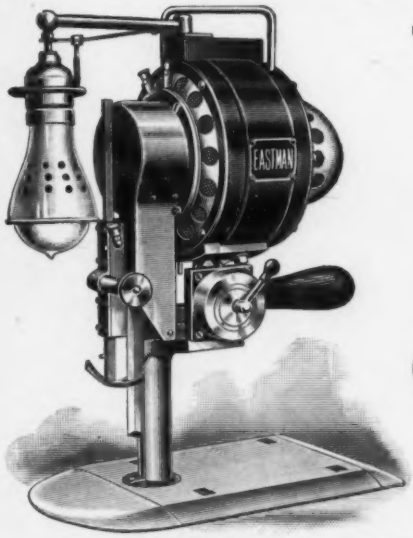
The Chemically Correct SIZE

Produces Maximum Results

THE SEYDEL MFG. Co.

86 Forrest Street **Jersey City, New Jersey**

Makers of SOAPS For Textile Mills



Time Is Money— Don't Waste It

Every minute counts
when you use an

Eastman Cutting Machine

the choice of those who know

Free trial for all styles

Straight Knives **Round Knives** **For Direct or Alternating Current**

THE EASTMAN MACHINE CO., BUFFALO, N. Y.

NEW YORK, 816 Broadway.
BALTIMORE, 110 W. Fayette St.
ST. LOUIS, 1318 Olive St
CHICAGO, 815 W. Van Buren St.
DETROIT, 97 Wayne St.
PHILADELPHIA, 110 N. 81xth St.
SAN FRANCISCO, 682 Mission St.
BOSTON, 11 Edinboro St.

MERCERIZED YARNS

Dyers, Bleachers, Gassers

Dyers of Colors Fast to

SUN AND BLEACHING

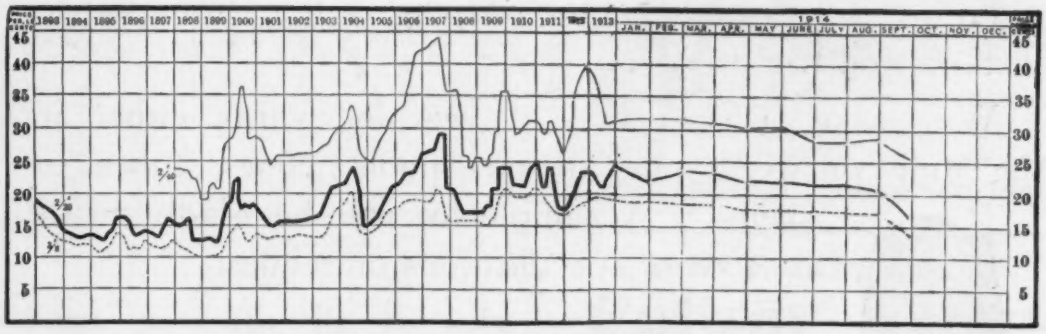
Aberfoyle Manufacturing Company

CHESTER, PA.

310 Lafayette Building
Philadelphia

746 Insurance Exchange
Chicago

Yarn Department



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

THE COTTON YARN MARKET

The first three weeks in September showed continually falling prices until the quotations reached a point where they were based on about 7 1/2 to 8 cent cotton. At this point manufacturers felt that they could come over and buy for possible future needs and there was a considerable inquiry for yarns. This coupled with the "buy a bale" movement, which caused farmers to hold their cotton at 10 cents, caused a violent reaction in the market, prices advancing from one to two cents a pound until at present they remain at or around those figures. Naturally this has caused buyers to discontinue purchasing for their future needs except at lower prices when they could be secured. There has been some improvement among the manufacturers, but few if any are running all their machinery and the proportion in operation varies from 30 to 80 per cent. The business transacted during the month was of wide variation, taking in practically all staple numbers from 4s to 100s, no certain size being favored. Some manufacturers were able to place contracts for liberal amounts of yarns and at a low price many of which will run until May or June next. The general opinion among manufacturers is that cotton will sell at eight cents. They believe that the "buy a bale" movement cannot possibly develop to large enough proportions to have any effect upon cotton prices, and accordingly they are not at all inclined to buy for future delivery except on this basis.

Eastern Cops

6s	17¼
8s	17¾
10s	18¼
14s	18¾
16s	19¼
18s	19¾
20s	20¼
22s	20¾
24s	21¼
26s	21¾
30s	22¾
34s	25
36s	26
40s	27

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler

12s	19
14s	19½
18s	20½
20s	21
24s	22½
26s	23½
30s	24½
36s	32
40s	34
45s	38
50s	41
55s	42½
60s	47½

Eastern Two-Ply Warps, Carded Peeler

2/30s	25
2/36s	32
2/40s	34
2/45s	38
2/50s	41
2/60s	49

Broad Silk and Ribbon Manufacturers

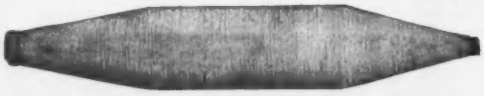
cannot obtain their maximum production unless the 2 or 3 ply Pure Silk Yarn used for warping is free from imperfections and true to size.

We make a specialty of warping yarns either in the grey or dyed, put up on spools, cones, tubes or skeins. A sample lot will be gladly made up to your specifications on request.

We make singles in all sizes on cops in the grey. Do you want to see samples?

Nonotuck Silk Company

CORTICELLI SILK MILLS
Established 1838
SPUN SILK YARNS
Florence, Mass.



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Windsor Locks, - Conn.

MANUFACTURERS OF

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools, Tubes and Cones. In Fancy Twist, Colors and Printed.

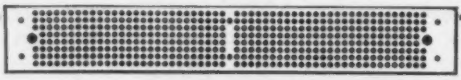
Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

MONUMENT MILLS, HOUSATONIC, MASS.

HIGH GRADE COTTON YARNS White, Colors, Bleached
On Beams, Jack-Spools, Cones, Skeins and Chain Warps

FAST-BLACKS & COLORS | For Woolen Mills a Specialty | WE SELL DIRECT

PRESS PAPER
HIGHEST GRADE
BEST VALUE
Mills
RAINBOW, CONN.



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FOR ALL PURPOSES
Inquiries Solicited

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Address
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THE PHILADELPHIA MARKET

7s and coarser	16½
8s and 9s	16¾
10s	17
12s	17½
14s	18
16s	18½
18s	19
20s	19½
22s	20
24s	20½
26s	21
30s	22
40s	26
50s	35

Southern high grade mule yarns:—

Cones

10s	20
12s	20½
14s	21
16s	21½
18s	22
20s and 22s	22½-23
24s	23½

Southern frame yarn, lower grades:—

6s and 8s	16
10s	16½

Eastern cones (high grade quality):—

10s	21½
12s	22
14s	22½
16s	23¼
18s	23¾
20s and 22s	24¼-24¾

Skein yarn (mostly Southern):—

4s and 8s soft	16-16½
10s and 12s	17-17½
14s and 20s	18-19
22s	19½
10/2	16
16/2	17
20/2	18
30/2	21
40/2	26
8/2	17
7/6	17

Southern warps:—

10/1	16½
14/1	17
16/1	17½
20/1	18½
22/1	19
26/1	20
30/1	21½
8/2	18
12/2	17
14/2	17¼
16/2	17½
20/2	18½
26/2	20
30/2	21
40/2	26
50/2	35

"WHY NOT TRY LAMBETH NEXT TIME"

JOHN F. STREET & CO.

Cotton Yarns

PROVIDENCE, R. I.

Providence, Chicago, Philadelphia, New York

Fred Sternberg & Co.

530 BROADWAY, NEW YORK

MERCERIZED GLAZED GASSED } COTTON YARNS

C. MOORE & CO.

Manufacturers of

Twines, Threads and Yarns

Jacquard Harness Twines of all kinds on hand and made to order

S. W. Cor. Fifth and Market Sts., Phila.

JAMES E. MITCHELL CO.

COMMISSION MERCHANTS

COTTON YARNS

122-124 Chestnut Street, - - - Philadelphia, Pa.
Brown Building, 185 Summer Street, - Boston, Mass.

LINDSAY THOMPSON & CO., LTD.

FLAX SPINNERS BELFAST, IRELAND

Linen Weaving and Knitting Yarns

LINEN THREADS OF EVERY DESCRIPTION

T. J. PORTER & SONS Large Stocks
Selling Agents, Philadelphia Quick Delivery

SOAPS HIGH GRADE SOAPS
Bleaching, Fulling and Scouring
Red Oil and Olive Oil Crown Soaps
J. O. Draper Co. Est. 1800 Pawtucket, R. I.

S. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

FITCHBURG, MASS.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cotton, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING COMPANY

PAWTUCKET, RHODE ISLAND

COTTON YARNS

CARDED and COMBED, in Nos. 10 to 120, from PEELER EGYPTIAN and SEA ISLAND COTTONS
MERCERIZED YARNS, IN SINGLE OR PLY, A SPECIALTY

Industrial Tape Mills Co.

Jasper and Huntingdon Sts. Phila., Pa.

Manufacturers of

NARROW FABRICS

SPOOL TAPES, STAY BINDINGS AND BRAIDS

Also Sole Manufacturers of

SAXON

New Guaranteed Non-Shrinkable Tape

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers

LINDSAY, HYDE & CO.,

2124 to 2130 E. York St., PHILADELPHIA, PA.

Knitting and Weaving YARNS

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment

EDWARD S. HYDE

226 CHESTNUT STREET

Philadelphia, Pa.

F. W. MAURER & SONS CO.

MANUFACTURERS OF

Fringes, Tapes, Bindings & Narrow Fabrics

Office and Factory: WAYNE AVE. and BRISTOL ST.
PHILADELPHIA

Lowell Crayons Meet the requirements of any cotton, woolen or worsted mill.

May we send samples? 15 colors and white

LOWELL CRAYON CO. Original Manufacturers LOWELL, MASS.

TRADE MARK ON EVERY BOX

The Bradley Stencil Machine

Makes stencils in half a minute, at reduced cost of 1-10 cent each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

A. J. BRADLEY

Also manufacturers of Oil Stencil Board. Write for prices and samples.

101 Beekman St.
New York, U.S.A.

HUGHES FAWCETT

115 and 117 Franklin St., New York

Linen Weaving and Knitting Yarns

Linen Jacquard Harness Twines

And Linen Yarns and Threads for every purpose

Turkey Red Yarns

LARGE STOCK PROMPT DELIVERIES

Established 1844.

BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY) *Gun Mill, Patterson, N. J.*

Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.

Roving Spindles and Flyers a Specialty. Light Forgings.

REPAIRING OF ALL KINDS.

The Ramie Agency

Manufacturers' Agents

New York

Ramie Yarns and Threads

HAVE REMOVED

TO NEW AND LARGER QUARTERS AT

432 FOURTH AVE. Corner of 29th St.

THE LINEN YARN MARKET

Reports from Belfast have it that the conditions in the linen yarn market have not been paralleled since the American civil war. Early in the month the market was in a very panicky condition and it was almost impossible to get quotations on any quantities and certainly no quotations for anything other than immediate business. Owing to the scarcity of raw material, and the poor outlook for obtaining further supplies from the continent, prices on all lines of linen yarns jumped practically out of reason. It was noticeable that coarse counts increased considerable, in fact, more in proportion than the finer spinnings. Naturally, spinners being anxious to keep their mills running as long as possible preferred the fine end of the business. For many weeks all heavy counts were at a premium and much higher prices were asked and good sales were made.

It is impossible to put over a large volume of business, even at a considerable advance in price, without knowing whether the mills have the raw material on hand to take care of the business.

("A" Quality)

35s Lea on cones	83-90
50s Lea on cones	96
60s Lea on cones	1.00
80s Lea on cones	1.00
90s Lea on cones	1.07-1.10
100s Lea on cones	1.10-1.20
110s Lea on cones	1.25-1.35
120s Lea on cones	1.55-1.70

COTTON MILL NEWS

*Connecticut, Versailles. The contractor has completed the erection of the addition to the plant of the Totokett Mfg. Company and part of the new space is now in use. This enlargement is planned to increase the carding, drawing and combing departments. Fine cotton goods are manufactured.

Georgia, Columbus. Contract has been let by the Meritas Mills for a new warehouse to be 100 by 150 feet, and work has been started on the foundation. The building will be in three compartments, 5 and 6 stories high. The Meritas Mills recently built an enlargement at the east end of the weave shed for storage purposes. J. T. Broadbent, 320 Broadway, N. Y., is the general manager.

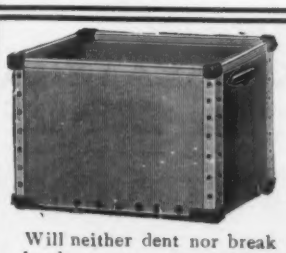
*Georgia, Greensboro. The Mary Leila Cotton Mill has practically completed extensive changes and improvements and will resume manufacturing within ten days. The changes include the erection of a new smoke stack and the installation of a large amount of new machinery to replace old equipment. Sheetings, drills and bag goods are manufactured.

P&B RAMIE YARNS
In all numbers for
Knitting, Weaving and Laces
Manufacturers
Erste Deutsche Ramie Gesellschaft
Emmendingen, Germany
Sole Agents
PFALTZ & BAUER, Inc.
Importers
300 PEARL STREET
NEW YORK

THE DEPENDABLE GOLD STAMPS
SKETCHES AND SAMPLES ON REQUEST
MEYERCORD CO. PHILADELPHIA & CHICAGO.

Walter W. Hodgson
Card Stamping and Repeating
FOR ALL TEXTILE FABRICS
Also Repeating for Throw Overs for Fine and French Index
315 West Lehigh Avenue - Philadelphia

Wool Year Book
In one volume are given outlines of woolen yarn manufacture, worsted yarn manufacture, on both English and French systems, weaving and finishing. There are numerous useful calculations, tables, recipes, and notes, 400 pages; green flexible leather.
Price $1.00.
Catalogue of Textile Books sent free
Lord & Nagle Co., Textile Publishers
144 Congress Street, Boston, Mass.


Diamond
FIBRE
Roving Cans
Mill Baskets
Barrels
Boxes
Will neither dent nor break when subjected to hard usage. Stronger than wood, lighter than steel. *Write for folder.*
DIAMOND STATE FIBRE CO.
Bridgeport, Montgomery Co., Pennsylvania
Branches in Principal Cities

The Best and Simplest

Machine on the Market for

Cutting Out Floating Threads

of Double Sole and High Spliced Heel Hosiery

Cuts and turns at one operation

There is no limit to capacity. Depends entirely on operator. A child can operate it. Send for further particulars to the builders.

Weinerth Ktg. & Machine Co., Inc.

316-320 McNight St., Reading, Pa.

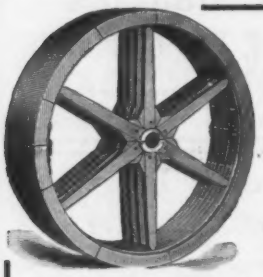
"Marathon"

Oak Tanned Belting

Worsted Aprons

R. H. HOOD COMPANY

1842 Germantown Ave., Philadelphia, Pa.



Gilbert Wood Split Pulleys

SAGINAW Manufacturing Company

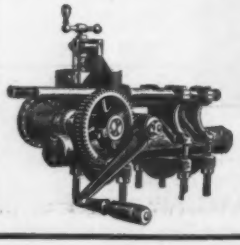
Saginaw, Mich., U. S. A.

New York Branch, 88 Warren Street
Chicago Branch, 105-109 North Canal Street
Sales Agencies in all the Principal Cities
Cable Address: Engrave A B C and Lieber's Code

YOUR REPAIR SHOP

is not complete unless equipped with one of these

BURR KEYSEATERS



They cut perfect keyseats in shafting anywhere. Save time, delays and money. No. 1 keyseats shafts to 5 in. diameter. Price with full set of cutters, $40.00 net. No. 2 takes shafts to 8 ins. Price, with cutters, $75.00 net.

Interesting booklet free.

John T. Burr & Son

440 Kent Avenue

BROOKLYN, : N. Y.

COTTON.

New Mills.

*Alabama, Alexander City. Buildings under construction for the new Bettie Francis Cotton Mills include a main building, 100 by 80 feet, and a warehouse, 55 by 55 feet. Benjamin Russell and T. C. Russell, president and treasurer, respectively, of the Russell Mfg. Company, Inc., manufacturers of cotton yarns and women's ribbed underwear, head the new Bettie Francis Mills.

Georgia, La Grange. A plan was announced by Fuller E. Callaway at the annual meeting of the Unity Cotton Mills, the Unity Spinning Mills, the Elm City Cotton Mills, of La Grange, and the Manchester Cotton Mills, of Manchester, in all of which Mr. Callaway is interested, for the organization of a new cotton mill company to manufacture export goods of a character produced by English and German mills. The capital and the investment in the plant will not be less than $500,000 and probably will be larger than this amount Mr. Callaway is quoted as stating that his associates in the companies mentioned above are enthusiastic over the prospects of the new enterprise and believe that the present time offers many economies in the construction and equipment of the plant. About $200,000 has been subscribed. It has been rumored for some time that such a project was being considered and Mr. Callaway and S. Y. Austin recently made an extended trip abroad for the purpose of visiting mills and investigating conditions. A definite announcement and details of the new project will probably soon be made.

.....

FACTS AND GOSSIP.

Alabama, Speigner Station. Operations have been resumed at the Alabama Cotton Mills, the State cotton mill which employs convict labor, after a shut down of three weeks. A number of repairs and improvements have been made throughout the plant.

*Canada, Ontario, St. Catharine's. E. C. Graves, Industrial Commissioner of St. Catharine's, is reported to be negotiating with men who are interested in locating a mill here for the manufacture of silk underwear. A Mr. Kromer and a Mr. Griffin, of Buffalo, N. Y., are reported interested in the project.

Connecticut, East Hampton. A new well is being driven on the property of the Summit Thread Company.

Connecticut, East Killingly. The bleach house of the International Cotton Mfg. Company has been put on a night and day schedule. It was noted previously that arrangements were being made to increase the output.

*Connecticut, Elmville. It is not likely that an addition will be erected and more looms added to the plant of the Sonnhill Worsted Company in the near future. They have ordered a new 200 h. p. turbine water wheel which will take the place of an old water wheel now in use and they are leasing looms in other plants.

COTTON MILL NEWS

Missouri, Kansas City. A company recently organized under the style of the Burdett Mfg. Company, with capital stock of $75,000, will manufacture mop yarns and wash boards. Plans have been made for a fire proof factory building, 200 by 100 feet, in which carding and spinning machinery will be installed. C. S. Van Noy has been elected president; F. D. Glore, secretary; I. C. Van Noy, treasurer, and F. E. McCreitt, manager.

*Tennessee, Knoxville. In two to three weeks the new cotton yarn plant of the Appalachian Mills will begin manufacturing. As noted in previous reports the Appalachian Mills took over the property of the Holston Underwear Company several months ago, erected two new buildings costing about $50,000, and installed 10,000 ring spindles with preparatory machinery operated by electric power for manufacturing 8s to 12s carded yarns for their own use.

...

Enlargements and Improvements.

Alabama, Alabama City. Work is being completed on the addition to the power department of the Dwight Mfg. Company. This improvement included the building of a 40-foot extension to the boiler room and the installation of three new boilers, also the building of a new chimney, 187 feet high.

Alabama, Athens. About $12,000 is being expended by the Fulton Cotton Mill Company for new spinning equipment and supplies necessary in overhauling the old spinning equipment. It is expected that this new machinery will be in operation about October 15.

Alabama, Eufaula. The Glenola Cotton Mills have resumed manufacturing. They have added lines of fancy dobby goods, several looms having been equipped with dobby heads.

*Alabama, Girard. The changes being made at the Girard Cotton Mills consist of replacing 200 old looms with the same number of new automatic looms. This is a department of the Eagle & Phenix Mills of Columbus, Ga., and is operated on colored cotton goods, the equipment including 7,600 ring spindles and 283 looms. Electric power is used. J. D. Massey is treasurer and buyer.

Baer's Automatic
Yarn and Cloth
Tester
MOTOR DRIVEN

Sold Exclusively Through
ALFRED SUTER
Textile Engineer
200 Fifth Ave., New York

ADVANCED TEXTILE DESIGN
By WM. WATSON.
A reprint of numerous articles which have appeared in various textile publications covering special fabrics, double and treble cloths, extra warp and filling figuring, jacquard designing, tapestry and upholstery fabrics, warp and filling pile fabrics, etc. Valuable information conveniently arranged for reference.
NOW READY FOR DELIVERY
460 Pages, 460 Diagrams. Price $4.00, Express Paid
LORD & NAGLE COMPANY 144 Congress Street, Boston

F. C. BARTON
65 Worth Street, New York
MANUFACTURER OF
"LILY" BRAND NARROW FABRICS
WEB, TAPE, BINDINGS, ETC.

THE BIAS NARROW FABRIC CO.
F. C. BARTON, President
65 Worth Street, New York
Bias and Straight Cut Fabrics and Ribbons
Embossing and Cutting Customers Own Goods a Specialty.

"AMERICAN"

Steel Split

PULLEYS

There are really good reasons for using "Americans" in preference to other pulleys. We are ready to put the evidence before engineers, if they will ask for it. It is interesting matter, too.

Sizes 3" to 72" Crown and Straight. All for double belts.

Stocked and sold by dealers

THE AMERICAN PULLEY COMPANY

PHILADELPHIA NEW YORK CHICAGO BOSTON

Good News from Germany

We have received word from Ebingen that the factory is running and that orders can be filled.

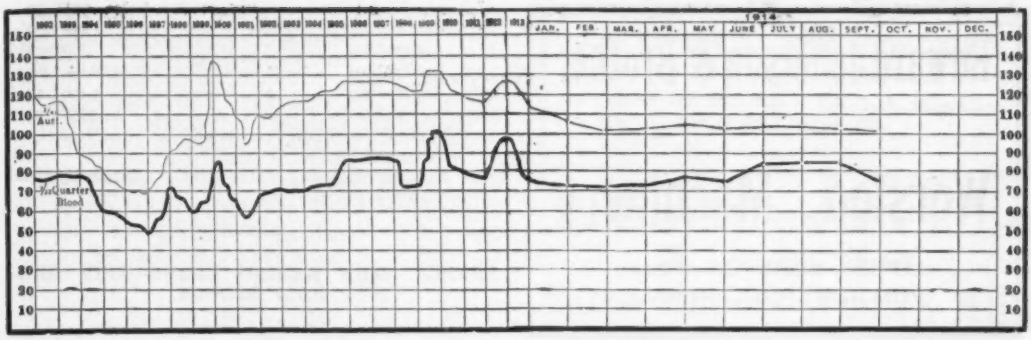
FIVE LARGE CASES OF LATCH NEEDLES, on the water from neutral ports, are due to arrive any day now.

Our stock is in good shape, and with shipments beginning to come in again fairly regularly we shall be able to supply all demands. Some lines are getting low, and as a little delay may occur in replenishing same, we ask that our friends notify us of their requirements as far in advance as possible.

Our Prices Have Not Been Changed

CONTINENTAL LATCH NEEDLE COMPANY

120 LIBERTY STREET, - - NEW YORK CITY



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

WOOLEN AND WORSTED YARN MARKETS

Spinners of worsted yarns are fairly well employed on old contracts which they have not as yet completed and which will carry them along probably for the next month or six weeks, after which time they will be in the market for new business.

The situation is a peculiar one due to the fact that many spinners have taken orders for yarns at prices on which they claim there is a bare profit. It is also said that many of the spinners are taking a chance on getting cheaper wools to enable them to make a profit on today's quotations. If wools go up in value the spinner will lose money, which of course will be graded according to how high the raw material advances. If, on the other hand, wools decline in value their profits will be enhanced according to the amount of the decline. Under existing conditions it is evident that they are not making above a fair profit on their product.

The weaving trade is quiet and unwilling to place orders for yarns of any size beyond actual wants, as the feeling generally prevailing is that prices will decline. There is a general feeling of improvement in the demands for yarns in practically all numbers, both French and Bradford, from the weaving trade. While they are receiving initial orders freely they are unwilling to call on the spinners for yarn until they are compelled to do so.

From the knitters, especially the sweater trade, whose business was somewhat stimulated by the recent cold spell, a fair amount of business is being received, especially for 16s to 24s, all colored, but no contracts are being placed as this trade is looking for a drop in prices within a short time and is placing their orders in quantities to fill orders as they come in.

A number of English spinners are reported as having been recently in the Philadelphia market soliciting business and having named very interesting figures for their yarns. The difficulty, however, that they are confronted with is the time of delivery. Some of them are bold enough to state that they will positively make deliveries in from six to eight weeks. The uncertainty of deliveries, however, is the drawback to placing orders for yarns in Bradford. If ocean traffic remains in a normal condition it is quite likely that the foreign yarns will again be found in our markets.

BRADFORD SPUN YARN

2/12 to 2/16 low common	60-62½
2/20 to 2/24 low 1/4	62½-65
2/20 to 2/25 1/25 1/4 blood	67½-70
2/26 to 2/28 1/4 blood	72½-75
2/32 1/4 blood	75-77½
2/20 3/8 blood	77½-80
2/26 3/8 blood	82-84
2/32 3/8 blood	84-86
2/36 3/8 blood	87½-90
2/40 1/2 blood	95-97½
2/40 delaine	1.02½-1.05
2/50 delaine	1.12½-1.15
2/40 Australian	1.10-1.12½
2/50 Australian	1.15-1.20
2/60 Australian	1.27-1.30
3/30 and 3/32 luster	95-97½
3/36 luster	1.10-1.12½

KNITTING YARNS

Dyed and Bleached—Bradford System

2/7s straight 1/4 blood	77½-82½
2 and 3 ply 10s-15s straight 1/4 blood	85
2 and 3 ply 16s-20s straight 1/4 blood	85
2 and 3 ply 20s-24s straight 1/4 blood	82½-87½
2 and 3 ply 24s-28s straight 1/4 blood	87½-90

(Reduce 7 1/2c. for yarn in oil)

FRENCH SPUN YARN

1/20 1/4 blood	74-76
1/20 high 1/4	77-80
1/20 3/8	80-82½
1/20 high 3/8	82½-85
1/20 1/2 blood	85-87½
1/30 1/2 blood	87½-90

Edward Jefferson & Brother

SPECIALISTS IN

Worsted Machinery

117-123 South 2d Street
PHILADELPHIA, PENNA.

MACHINERY ERECTED

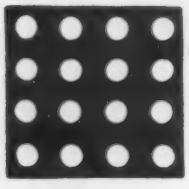
For Spinners of Cotton, Woolen, Worsted, Silk and Flax
Making a Specialty of WorstedMachinery
Carding, Combing, Drawing, Spinning, Twisting, Finishing, Lining, Levelling, Dismantling, Packing, Shipping
Work Done Anywhere *All Work Guaranteed*
MICHAEL KERWIN, 2321 E. Norris St., Philadelphia, Pa.

William Whitman Co.
COMMISSION MERCHANTS
COTTON and WORSTED YARNS
BOSTON NEW YORK PHILA. CHICAGO CHARLOTTE

JAMES LEES & SONS CO.
MINERVA MILLS
Spinners of WORSTED YARNS
For Weaving and Knitting
In the Grey and in all colors and mixtures
Philadelphia Office: 627-29 Bourse Bldg.
Mills and Office: Bridgeport, Montgomery Co., Pa.

J. B. Jamieson
77 Summer St., Boston
Imported Worsted Yarns
For Knit Goods, Men's Wear and Dress Goods

HAROLD R. SHIRLEY
242 Chestnut St., Philadelphia, Pa.
French Spun Worsted and Merino Yarns
Bradford Spun Yarns
Woolen Yarns
FOR WEAVING AND KNITTING



Perforated Plates for Wool Washing
Rinsing and Carbonizing
In Special Metal
BECKLEY PERFORATING CO.,
Garwood, N. J.

1/40 1/2 blood	92½-95
1/50 delaine	1.00-1.02½
1/40 Australian	95-97½
1/50 Australian	1.02½-1.05
1/60 Australian	1.10-1.12½
1/70 Australian	1.17½-1.20

For two ply knitting twist add 5c. additional to above prices.

For two ply weaving yarns add 7 1/2c. additional to above prices.

FRENCH SPUN MERINO YARNS—FINE ONE-HALF BLOODS

Standard Grade

1/20 50/50 White Merino Cop	69
1/30 50/50 White Merino Cop	71
1/40 50/50 White Merino Cop	73
1/20 60/40 White Merino Cop	73
1/30 60/40 White Merino Cop	75
1/40 60/40 White Merino Cop	77
1/20 70/30 White Merino Cop	78
1/30 70/30 White Merino Cop	80
1/40 70/30 White Merino Cop	82
1/20 80/20 White Merino Cop	82
1/30 80/20 White Merino Cop	84
1/40 80/20 White Merino Cop	86
Sliver and Sanitary Mixes	3c. more
Coning on 1/20	2c. more
Coning on 1/30	3c. more
Coning on 1/40	4c. more

WOOLEN AND MERINO YARNS

Within the last couple of weeks there has been a better demand for yarns for quick delivery caused by the recent cold weather acting as a stimulate upon the manufacturers using this grade of yarns. It is possible that this demand for yarns will keep up for the next month or two. The demand is for 2/20 and 2/23 cut yarns with prices firm and a tendency to advance about 2 1/2 cents per pound. Orders for dyed yarns are still being taken on prices subject to change, as none of the spinners or dealers are willing to guarantee prices owing to the uncertainty of the dyestuffs situation.

THE RAG AND SHODDY MARKET

The market for woolen rags has been active and higher, this result having been brought about by an improved domestic demand as well as inquiries from abroad. The improvement has extended to all grades and in a number of cases a scarcity of desirable lots is reported. The exports show a decided shrinkage as compared with a year ago, this being due to the interruption of transportation and exchange facilities, but these difficulties are likely to be remedied in the near future. The July and August exports of woolen

rags from Boston, New York and Philadelphia for 1913 and 1914 were as follows:

Month	lbs.	value
July, 1914	2,157,247	$84,741
August, 1914	382,040	14,483
August (1913)	3,064,873	98,385

The shoddy trade has been quiet, although manufacturers report a better demand. Spinners have bought sparingly, their purchases having been limited to immediate requirements. Wool waste has been in fair demand with prices firm. Silk waste is in very small supply and prices are higher. The cotton waste market is depressed owing to conditions in the raw cotton trade.

SHODDIES AND EXTRACTS

White yarn, best all wool	45-55
White knit, all wool, best fine	30-35
White knit, No. 2	25-27½
Light yarn, shoddy, extra fine	30-35
New pure indigo blue	24-27

Merino

Fine light, all wool	22½-24
Medium light, all wool	17
Fine black, all wool	21
Fine dark, all wool, best grade	18
Medium dark, all wool, No. 2	14
Red knit stock, strictly all wool	18-20
Red flannel, all wool	17-19
Dark blue for hosiery, strictly all wool, No. 1	20-25
Dark blue for hosiery, not all wool, No. 2	15-18

NEW WOOLEN RAGS

Fine merchant tailors	7½
Choice light colors	8½
Browns	12
Blacks	6½
Blues	9
Fine dark	7-12
Medium dark	4-6

Serges

Black	12-13
Blue	13-14

Flannels

Very light	17-18
Mixed	10-11
Black	6-7

SOFTS AND KNIT STOCK

Soft woolens, best	4½-5
Old white flannels	10-12
Old red flannels	8½-8½
Old blue flannels	3-5
Old plaids	3
White stockings	20-23
Clear dark hoods	6-7½
Light hood stock	12½-13½

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EATON RAPIDS, MICHIGAN

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WORKS:

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THE SILK MARKET

The silk market has been very erratic since our last report. It is thought that the present quotations are now at their bottom, but this is a question.

Japan has at the present time at least 17,000 bales of the raw product on hand. As the European countries are buying but little silk, there is sure to be plenty of silk for some time to come. At one time it was thought that the present difficulties in the far east would interfere with transportation facilities, but so far these fears have been groundless.

The situation in Italy is reported quiet as far as the silk industry is concerned, but the country is on the verge of war, and no one can predict the outcome. While Milan is producing some silk the amount will not be large. Under the present circumstances there will be but very little silk used in the European districts.

The manufacturers in this country are fairly busy, especially on narrow goods. Broad silk manufacturers are not so busy except on certain lines. While it was thought that the shortage of dyestuffs would affect more or less all the textile manufacturers, this has not proved true.

Ribbon manufacturers are still quite busy, and their product is much called for especially in Roman stripes and sateens. It is thought that ribbons will be worn for another season, and the manufacturers of this line predict a good spring business. Under the existing conditions with the war in Europe, the buying policy of the silk manufacturers has been on a conservative basis. It is to be hoped that this situation will change for the better soon.

In the dry goods districts it is reported that the retail silk business is very quiet except in the narrow widths, which are still having a good call. This can be attributed to the effect of the war, and will probably last until the end of hostilities. In broad silks, poplins and crepes are still popular, while satins and velvets look good for spring.

There will be no great improvement in the silk industry under prevailing conditions, but all in the trade are looking hopefully for a speedy settlement of the difficulties. Below are prices current:

European

Grand Extra Classical Piedmont	4.55-4.60
Extra Classical Italian 12/14 12/16	4.25-4.30
Classical Italian 13/15 24/26	4.05-4.10
Best No. 1 Italian 13/15 24/26	4.00-4.05

6 months' basis

Japan

Filature Kansai Extra Extra	3.85-3.90
Filature Kansai Extra 13/15	3.65-3.70
Filature Shinshu Extra 13/15	3.55-3.60
Filature Kansai Best No. 1 13/15	3.35-3.40
Filature Kansai No. 1 13/15	3.30-3.35
Filature Shinshu 13/15	3.25-3.30
Rereels No. 1 13/16	Nominal
Rereels No. 1 1/2 13/16	Nominal
Rereels No. 1 1/2-2	Nominal

6 months' basis

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Deals with the preparation of yarn from the raw silk; also waste silk spinning and the utilization of waste products. For silk manufacturers or workers, or for men who use silk in connection with cotton, worsted or wool. 158 pages; 117 illustrations; cloth. Price $2.50, prepaid

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China

Canton XXA 14/16 (new silk)	2.70-2.75
Canton XXB 14/16	2.55-2.60
Tsattle Blue Dragon & Flying Horse	3.05-3.10
Tsattle Kun Kee Mars No. 1	2.70-2.75
Tussah Filature Eight Cocoons No. 1-2	1.20

SPUN SILK

The shortage of spun silk which was thought would occur has not materialized and although the prices have advanced, manufacturers are reported very busy. This condition is likely to last for some time to come. It is to be hoped that no shortage will occur and that this industry will continue running on full time. Whether another advance in prices will occur or not no one can predict. Prices follow:

60/2	3.95
50/2	3.85
40/2	3.75
30/2	3.60
20/2	3.50
10/2	3.40

ARTIFICIAL SILK

This industry is very quiet at the present time, although the outlook for the future seems bright. No artificial silk is being received from Europe, except England, so no quotations are available.

When the braid manufacturers get busy again, it will help this branch of the industry greatly. It is predicted that in the near future, this will come about. Below are prices current:

150 Deniers English A—Bleached	2.00
150 Deniers English B—Bleached	1.90
150 Deniers English C—Bleached	1.75

—÷—

SILK MILL NEWS

Pennsylvania, Selinsgrove. William F. Groce, who recently established a small throwing plant here is building an addition. A specialty is made of throwing 2, 3, 4, 5 and 6 thread tram silk. Mr. Groce was formerly superintendent of the Littletown Silk Co., at Littletown, Pa

*Rhode Island, Central Falls. Some of the machinery has been installed in the new factory building of the Bengal Silk Mills and manufacturing will be started about October 1. Construction work was started on this enlargement in May. The Bengal Silk Mills are owned by Henry T. Molter, of Providence, and manufacture broad silks on present equipment of 60 looms. Electric power is used.

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SILK

New Mills.

Pennsylvania, Wyoming. The White Haven Silk Company, Peter Magagna, president and manager, of White Haven, Pa., has awarded the contract for the erection of a branch mill in Wyoming to be operated under the name of the Anthracite Silk Throwing Company. Manufacturing will be started in the new plant in about four months and about 100 hands will be given employment at first.

Pennsylvania, York. A new silk plant is being started at 1159-1185 Elm St., in the east end, under the name of the Edna Silk Company. High grade ribbons will be manufactured. The plant will give employment to about forty hands and will be under the management of W. F. Pritz, who came here from New York City. The space occupied is a part of the plant of the Independent Lamp & Wire Company, a 1-story brick factory building, 240 feet long, and 35 feet wide, and has been leased for a term of years. Electric power will be used.

*Rhode Island, Pawtucket. The new mill of the Royal Weaving Company is being rushed to completion and will give the concern nearly double its present capacity. The new building is three stories high and has a frontage of about 100 feet on Sabin St., extending back about 300 feet on Central Ave. It is of brick construction with a saw-tooth roof. Construction work was begun early in the spring.

Mills Starting Up.

Massachusetts, Turner's Falls. Although somewhat handicapped by the scarcity of help the new McLane Silk Company is gradually starting up more machinery and when a larger supply of experienced and inexperienced help is available they will work to full production. This is a new plant established by F. A. McLane, formerly superintendent of William Skinner & Sons, Holyoke. The equipment comprises 100 looms for weaving broad silks.

*Pennsylvania, Avoca. Work is being rushed to completion on the new throwing mill to be operated by the Ramsay Silk Company and it is expected that within a week or ten days some of the machinery will be set up. A specialty will be made of crepe, grenadine, chiffon and other special hard twist threads. John Ramsay, formerly superintendent of the Shamokin plant of J. H. & C. K. Eagle, heads the concern and has moved here from Shamokin.

*Pennsylvania, Susquehanna. Practically all of the equipment has been installed in the plant of the new Tri-Borough Throwing Company and manufacturing will be started within the next few days. Reports of this project have been given previously.

Enlargements and Improvements.

Pennsylvania, Pittston. A new automatic sprinkler system is to be installed in the local plant of the Hartley Silk Mfg. Co., manufacturers of broad silks. The main office is at Towanda

SILK MILL NEWS

Enlargements and Improvements.

Connecticut, South Manchester. According to a local report the new weave shed of Cheney Bros. is to be put into operation just as soon as possible. All of the looms will not be new as some of them will be moved from the present velvet weaving mill, but much of the space will be filled up with new looms.

New Jersey, Paterson. The Lincoln Silk Company is increasing the output of its plant. It is reported the company has enough orders on hand to run to full production for the rest of the year.

*New York, Theresa. The management of the Indian River Silk Co., which now operates the silk mill here, expects to add 30 new looms by January first. John P. Clark is president and manager; H. K. Gaynor, Jr., 381 Fourth Ave., New York, is treasurer and selling agent.

Pennsylvania, Allentown. A greenhouse, 20 by 30 feet, is to be erected on the grounds of the Phoenix Silk Mfg. Company in order to cultivate shrubbery and flowers for the plots around the mills. During the past year this concern has greatly beautified the surroundings of the plant by setting out shrubbery and trees.

*Pennsylvania, Berwick. Fifteen hundred spindles will be added to the equipment of the Muster Silk Company, silk throwsters, on the completion about September 30 of the new addition. A further increase will be made later.

*Pennsylvania, Easton. Work will be finished on the addition to the plant of Haytock-Cronemeyer Company and machinery installed by October 1. The addition is 50 by 200 feet, and is to be used for dyeing and finishing. This concern manufactures plain and fancy broad silks and was formerly known as the Easton Silk Company.

*Pennsylvania, Plymouth. In connection with the building of the new mill the Atwood Silk Company is selling $40,000 of 6 per cent. bonds. The modern new mill is nearing completion and it is said will represent an investment when fully equipped of $140,000. It is the intention of the company to continue the old plant in operation until the new machinery is set up and ready, when the help will be transferred to the new building.

MISCELLANEOUS.

*Canada, Quebec, Massueville. R. J. Reeves, formerly of Providence, R. I., plans to establish a linen factory here. He reports that he will soon begin the erection of a mill with a capacity of 1,200 spindles and 100 looms to manufacture toweling. The proposed name of the industry is the Canadian Crash Company. It was incorrectly noted in a previous report that Mr. Reeves was interested in a felt mill project.

Massachusetts, Chicopee Falls. New equipment installed in the Hampden Bleachery includes a new bleach machine, a bluing machine and a 35 h. p. induction motor. E. J. O'Neil is buyer and E. J. O'Neil, Jr., is agent. The plant is working 24 hours a day.

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Oxalic	19-20
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Muriatic, 18°	1.15-1.75
Tartaric crystals	75-77½

Miscellaneous Chemicals and Dyestuffs

Acetate of lime, gray, 100 lbs.	1.50-1.65
Alum, lump	3.50
ground	3.75
powdered	5.00
Aqua Ammonia, 26°	4¾-5¾
Borax	3-5
Cream tartar, crystals	48-50
Fuller's earth, powdered, ton	17-20
Glauber's salt	75-92½
Potash, chlorate, crystals	8-9
powdered	9-14
carbonate	25-30
Soda, bicarbonate	1.10-1.30
Soda, caustic, domestic, 60 per cent.	1.80-1.91
Sal., American	65-80
Vitriol, Blue	4.76-5.00
Acetate of soda	4½-5
Acid, picric, best crystals	70-75
tannic, commercial	36-37
Albumen, egg	42-65
blood	19½
Aniline, oil	8
salt crystals	8-9
Alizarine	15-16
Bichromate of potash, American	14-15
Bichromate of soda	7¼-8
Bisulphite of soda	75-1.25
Cutch, bales	4-8
Dextrine, imported potato	4-7
Divi-divi, ton	33-47

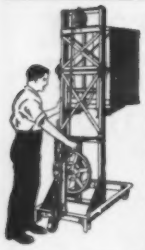
MILL NEWS

Connecticut, Staffordville. The plant of the Garland Woolen Company has been destroyed by fire. The water from the tower to the sprinkler system had been shut off and the loss is total. The mill was a 4-story wooden structure and contained 25 looms for manufacturing men's suitings and dress goods. The loss is estimated at $70,000, covered by insurance.

Pennsylvania. Philadelphia. The plant of Frederick Whitaker, manufacturer of cotton and woolen waste on Collins St., above Huntingdon, was recently damaged by fire, the loss being estimated at about $10,000.

Washington, Ellensburg. Manufacturing has been resumed at the Ellensburg Woolen Mill after a short idleness, during which advantage was taken of the opportunity to overhaul and repair the equipment.

West Virginia, Wheeling. A charter has been granted D. W. Greig, Inc., with capital stock of $30,000 to manufacture and deal in woolen and cotton fabrics. The incorporators are George W. and Margaret A. Greig, and others.



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SILK MILL NEWS

New Hampshire, Tilton. Repairs have been completed at the mill of A. D. Carter and manufacturing has been resumed after an idleness of two weeks.

New Jersey, Paterson. At a meeting of creditors of the London Silk Ribbon Mfg. Company, an offer of 15 per cent., payable 5 per cent. cash, and the balance in a six months' note, was favorably received. The liabilities are estimated at about $3,500.

New Jersey, Paterson. It is reported that French silk manufacturers are preparing to lease looms in Paterson to fill orders for goods which otherwise would be lost on account of the closing of plants in France. The opinion is that American manufacturers will have enough to do in filling their own orders and no large number of suitable looms can be spared.

New Jersey, Paterson. William A. Jacobson, president of the Scandia Silk Mfg. Company, and Joseph C. Martin, a paper box manufacturer, have established a new industry in the Smith Bldg., on Market St., for the manufacture of novelty girdles and sashes. Fifty girls are employed in the plant.

New Jersey, Paterson. The demand for fancy silks is increasing according to the statement of a number of manufacturers.

New Jersey, Union. The Union Hill Silk Finishing Company has been incorporated with capital stock of $25,000 by Charles E. Prior, R. G. George and Thomas L. Livermore of New York.

New York, Binghamton. The J. & D. D. Miller Company has been dissolved. The first of the year the plant of this company was sold to the Cedar Cliff Silk Company of Paterson, N. J., and it is now being operated as a branch of the main plant of the Cedar Cliff Company.

New York, Gouverneur. Negotiations have been resumed between the Perfect Silk Throwing Company of Shamokin, Pa., and the local Board of Trade. It is understood that the Perfect Company has offered to come here if the cost of moving its machinery and equipment is defrayed by the Board of Trade. The estimate of the cost is $2,500. In the original negotiations the Perfect Silk Throwing Company asked for an investment of $30,000 of local capital.

AMERICAN VULCANIZED FIBRE CO.
C. C. Bell, V. P., 12 Pearl St., Boston, Mass.
MANUFACTURERS
Laminar Fibre Roving Cans
All sizes, standard and special. Electrically Welded Tinned Steel or Fibre Rims. Steel or Wood Bottoms. Fibre or Steel Kicking Bands.
Strongest and Smoothest Can on the Market. In Use for 25 Years

MISCELLANEOUS.

Massachusetts, Fall River. A rearrangement of the steam system is being made by the Fall River Bleachery and they are adding to their power plant by the installation of a new turbine. Spencer Borden, Jr., vice-president and treasurer, states that the cost of the improvements will be about $35,000. The Fall River Bleachery bleach and finish cotton fabrics with a capacity of fifty tons per day.

Massachusetts, Lawrence. Additions are being made to the power equipment of the dye works department of the United States Worsted Company.

*Massachusetts, North Brookfield. Construction work has been started on a new bleach house for the Phoenix Linen Company, successors to the Oxford Linen Mills. The building will be located behind the old brick structure. As noted previously, a new boiler house is also under contemplation.

New York, Auburn. The International Harvester Company has resumed manufacturing at the Auburn plant with about one-third of the employes. Full production will be resumed about the middle of the month.

*New York, Brooklyn. The Eastern District Piece Dye Works, a new concern located at 200 Norman Ave., have just bought an additional plot, 85 by 100 feet, adjoining their plant, and are making plans for a 3-story finished plant and a 1-story dye house. A business of dyeing and finishing silk piece goods is carried on with present capacity of 300 pieces per day, and employment is given to 50 hands. Alfred R. Teichman is superintendent and buyer.

*New York, Fonda. Manufacturing will be started about November 15 by the Fonda Silk Fabric Company, one of the new silk jersey cloth plants being established in this vicinity. Construction work was started on a building July 1, and operations will be started with one 80-spindle winder, one warping machine and two 120-inch weaving machines. The concern is a copartnership composed of W. J. Weeper and John H. Rathman. Electric power will be used and employment given to six or seven hands at first. The product will not be dyed at first, but later on a dyeing and finishing department may be added.

Interruption of Production

is recognized by textile mill operators as the most costly element of repairs.

Allis-Chalmers TEXTILE MOTORS

are so liberally designed and so sturdily constructed that they will operate for years without need of repairs providing they are properly supplied with oil while in service.

"Motors for all drives"

Allis-Chalmers Manufacturing Company

Power and Electrical Equipments

Milwaukee - Wisconsin

For all Canadian business refer to
Canadian Allis-Chalmers, Limited, Toronto, Ont.

Felton's Mill Brushes

Felton of Manchester, N.H.

Are you having any difficulty in supplying your chemical or dyestuff requirements? If so,

LET US DO YOUR SHOPPING

We do a general BROKERAGE business in all chemicals, dyestuffs, and anilines.
Also headquarters for

Sizing and Finishing Products **Softeners** **Soluble Waxes**
Soluble Oils **Cocoanut Oil Substitute**

Samples sent on request

J. A. VAN BRUNT & CO., Inc.
92 WILLIAM STREET - - - - NEW YORK

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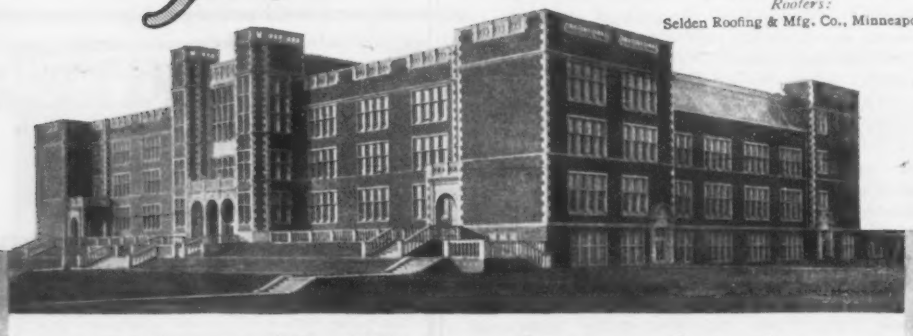
Central High School, Minneapolis, Minn.
Architect:
Wm. B. Ittner, St. Louis, Mo.
Roofers:
Selden Roofing & Mfg. Co., Minneapolis.



A *good* building and a *good* roof

A fine, big, permanent building like this usually carries a Barrett Specification Roof. Why?

Well, first—because it's big. Mere bigness compels a careful study of costs—and the cost of a Barrett Specification Roof is lower than that of any other permanent roof.

Second—Its bigness compels careful study of future maintenance costs and the maintenance cost of a Barrett Specification Roof is practically nothing. It will usually last 20 years or more without painting or tinkering of any kind.

Third—Being a first-class modern building, it is safe to suppose that it is being built by a first-class, up-to-date architect or engineer, and such live men know the low unit cost of Barrett Specification Roofs.

Big schools, big factories, big warehouses, big piers, big apartments, big office buildings, big everything usually have Barrett Specification Roofs. For small buildings they are just as economical and satisfactory.

A copy of The Barrett Specification with roofing diagrams mailed free on request.

Special Note—We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding. If any abbreviated form is desired, however, the following is suggested:

ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspection requirement.

BARRETT MANUFACTURING COMPANY

New York Chicago Philadelphia Boston St. Louis Cleveland
Cincinnati Pittsburgh Birmingham Kansas City Minneapolis Seattle

THE PATERSON MFG CO., LIMITED

Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

TRADE B MARK

MILL STOCKS

Owing to the disturbed financial relations, current quotations of mill stocks are nominal. Following are the quotations previous to the breaking out of the war:

NEW BEDFORD MILLS

	Bid.	Asked.
Acushnet Mill	137½	...
Beacon Mfg. Co., com.	102	...
Beacon Mfg. Co., pfd.	...	115
Booth Mfg. Co., com.	...	21
Booth Mfg. Co., pfd.	...	47½
Bristol Mfg. Co.	...	67½
Butler Mill, com.	...	90
Butler Mill, pfd.	...	100
City Mfg. Co.	...	92
Dartmouth Mfg. Co., com.	127½	...
Dartmouth Mfg. Co., pfd.	97½	...
Gosnold Mfg. Co., pfd.	...	89
Grinnell Mfg. Co.	...	180
Holmes Mfg. Co., com.	104	...
Holmes Mfg. Co., pfd.	105	...
Kilburn	118	...
Manomet	...	114½
Nashawena Mills	...	66
N. B. Cotton Mills Co., com.	100	98½
N. B. Cotton Mills, pfd.	96	...
Neild Mfg. Co.	...	95
Nonquitt Spinning Co.	...	94
Page Mfg. Co.	...	77½
Pierce Mfg. Co.	295	300
Pierce Bros., Ltd.	100	...
Potomska Mills	115	...
Quissett Mills, com.	...	98
Quissett Mills, pfd.	100	102½
Sharp Mfg. Co., com.	...	85
Sharp Mfg. Co., pfd.	...	100
Soule Mills	...	80
Taber Mills	...	100
Wamsutta Mills	115	119
Whitman Mills	114½	123

SOUTHERN MILLS

	Bid.	Asked.
Abbeville	85	100
American Spinning Co.	155	...
American Spinning Co., pfd.	100	...
Arkwright Mills	...	100
Aragon, com.	59	...
Avondale	120	126
Arlington	130	...
Brogan Cotton Mills (new series)	...	81
Brookside	...	...
Cannon	125	...
Cabarrus	120	...
Chadwick-Hoskins	...	...
Chadwick-Hoskins, pfd.	...	101
Chiquola Cotton Mills, pfd.	80	...
Clifton, com.	80	...
Clifton, pfd.	96	100
Clara	100	...
Cliffside	190	...
Columbus Manufacturing Co.	...	85
Darlington	75	83½
Drayton	29	...
Erwin, pfd.	...	105
Easley	...	125
Exposition	...	210
Florence	125	128
Gaffney Manufacturing Co.	59	...
Gibson, com.	109	110
Gluck	...	100
Graniteville, S. C.	140	152
Grendle	...	96
Glenwood	...	150
Glen Lowry, pfd.	...	76
Highland Park	200	203
Highland Park, pfd.	...	102
Hartsville	175	195
Hartsville, pfd.	...	100
Henrietta Mills	...	117
Inman, com.	...	108
Inman, pfd.	...	100
Kesler	...	160
Lancaster Cotton Mills	130	...
Lancaster Cotton Mills, pfd.	96	...
Lanet	...	112
Laurens	127	136
Limestone	...	126
Lockhart, S. C.	...	72½
Loray Mills, pfd.	...	86
Modena	...	150
Mollohon	...	101
Monarch, S. C.	115	...
Newberry	125	...
Norris Mills	...	121
Ninety-six	130	140
Orr	...	86
Ozark	100	110
Parker Mills, com.	7	10
Parker Mills, pfd.	30	35
Parker Mills, guar.	...	88½
Pacolet Mfg. Co., com.	...	108
Pacolet Mfg. Co., pfd.	100	...
Patterson	129	...
Pelzer Manufacturing Co.	125	164
Piedmont Manufacturing Co.	150	167
Pell City, Ala.	...	80
Poe, W. F., Manufacturing Co.	100	103
Riverside Manufacturing Co.	...	78
Salisbury	150	...
Roanoke Mills	...	156
Saxon	114	...
Spartan	109	...
Toxaway	...	78
Union Buffalo, first pfd.	34	51
Union Buffalo, second pfd.	...	10
Warren Mfg. Co., com.	78	...
Warren Mfg. Co., pfd.	...	107
Washington Mills	7	...
Washington Mills, pfd.	100	...
Woodside Mills Co., com.	...	88½
Woodside Mills Co., pfd.	...	80
Woodside Mills Co., guar.	...	101
Watts	...	85
Williamson	...	125
Ware Shoals	70	...
Whitney	110	120
Wiscasset	140	150
Woodruff	...	107
Woodlawn	120	126
Young Hartsell	70	...

OTHER NEW ENGLAND MILLS

	Par Value.	Last Sale.
Amoskeag Mfg. Co., com., N. H.	100	62
Amoskeag Mfg. Co., pfd., N. H.	100	99½

PROFIT INCREASERS

Because they show you how to prevent waste and *cut down* your losses, you can *increase your profits* by using

Durant Counting Machines

They give you a mechanically accurate record of production by pick, yard or piece. With our 30 different counters we can meet your needs. ¶ Ask for catalog 20 and free trial offer.

W. N. DURANT CO., Milwaukee, Wis.
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WM. H. MOHN
READING, PA.

High Grade
Grey Iron Castings

MAKING A SPECIALTY OF
SOFT IRON
guaranteed to be easily machined.

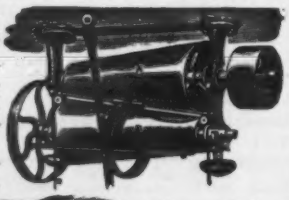
Castings Sand Blasted or Tumbled, as desired.

Write for particulars and estimates.

Variable Speed Countershafts

The Evans Friction Cone Pulleys will drive your machines at any desired speed from 1 to 6 by simply pulling a cord.

They are guaranteed to do your work.



We'll furnish them for either floor or hanging use. Over Ten Thousand Sets in Operation in this Country and Europe.

Send for Catalogue.

EVANS FRICTION CONE COMPANY
G. Frank Evans. Newton Center, Mass.

Androscoggin Mills, Me.	100	137
Arlington Mills, Mass.	100	80
Appleton Co., Mass.	100	172
Bates Carpet Co., Me.	100	213¼
Bigelow Carpet Co., Me.	100	213¼
Boston Duck Co., Mass.	700	1280
Boston Mfg. Co., Mass.	100	85
Cabot Mfg. Co., Me.	100	100
Chicopee Mfg. Co., Mass.	100	90
Continental Mills, Me.	100	75¼
Dwight Mfg. Co., Me.	100	1021¼
Edwards Mfg. Co.	100	99
Essex Co., Mass.	100	187¼
Everett Mills, Mass.	100	112¼
Fisher Mfg. Co., Mass.	100	125½
Franklin Co., Me.	100	201¼
Great Falls Mfg. Co., N. H.	100	172¼
Hamilton Woolen Co., Mass.	100	95
Hamilton Mfg. Co., Mass.	100	77½
Hill Mfg. Co., Me.	100	90¼
Jackson Co., N. H.	1000	985
Lancaster Mills, Mass.	100	75
Lawrence Mfg. Co., Mass.	100	151¾
Lockwood Co., Me.	100	97
Lowell Bleachery, Mass.	100	125
Lowell Hosiery, Mass.	100	40
Lyman Mills, Mass.	100	120
Massachusetts Cotton Mills, Ga.	100	93⅛
Massachusetts Cotton Mills, Mass.	100	116
Merrimack Mfg. Co., com., Mass.	100	24⅝
Merrimack Mfg. Co., pfd., Mass.	100	83½
Middlesex Co., Mass.	100	55
Middlesex Co., pfd., Mass.	100	75
Monadnock Mills, N. H.	100	100
Nashua Mfg. Co., N. H.	500	672½
Naumkeag Steam Cot. Co., Mass.	100	172
Newmarket Mfg. Co., N. H.	100	95
Otis Mfg. Co., Mass.	1000	1852½
Pacific Mills, Mass.	100	107
Pepperell Mfg. Co., N. H.	100	305
Plymouth Cordage Co., Mass.	100	228
Salmon Falls Mfg. Co., N. H.	300	150
Shaw Stocking Co., Mass.	100	75
Suncook Mills, N. H.	100	20
Thorndyke Mfg. Co., Mass.	1000	1305
Tremont & Suffolk Mills, Mass.	100	100⅜
Waltham Bleachery & Dye Works, Mass.	100	140
York Mfg. Co., Me.	100	85

—÷—

MISCELLANEOUS.

Pennsylvania, Philadelphia. Francis Gwynn, until recently vice-president of the Quaker Dye & Bleach Works, has withdrawn his interest from that concern and is now identified with the American Dyeing Co., 2622 N. Front St., where he has taken full charge of the dyeing department. The Amrein Company, who are dyers of woolen and worsted yarns for weaving and knitting, have installed new dyeing machines, enabling them to increase their capacity by 3,000 pounds per day.

South Carolina, Anderson. A slight loss was caused by fire in the picker room of the Conneross Yarn Mills. The plant is running as usual.

MISCELLANEOUS.

*New York, Gloversville. The Normandie Silk Mills have finished their new building at 25 Washington St. and are moving from their former location at 5 Cayadutta St. Several glove fabric looms that were ordered abroad have been delayed.

New York, New York City. A new concern has begun operations dyeing, bleaching and finishing silk and silk mixed piece goods at 343 W. 26th St., under the style of the Artistic Piece Dye Works, A. Kaback, proprietor. The new concern occupies two floors of the building, giving them about 15,000 square feet. One floor is devoted to finishing and offices and the other floor to the dyeing department. The plant has a capacity of 300 pieces daily.

*New York, New York Mills. At a meeting of stockholders of the New York Mills it was voted to transfer the bleachery to the new Oneida Bleachery, Inc., recently organized, as outlined previously. Alexander F. Hobbs has been elected president of the new Oneida Bleachery, Inc.; W. S. H. Baker, secretary, and Walter L. Lowry, treasurer. As stated in the previous report the bleachery will be operated on the converting of khaki, muslins, cambrics, nainsooks for the domestic and export trade, and they will also operate a sheet and pillow case factory.

Pennsylvania, Chester. An addition in the form of a one-story brick building, 35 by 35 feet, is being erected for the Aberfoyle Manufacturing Co., mercerizers and dyers of cotton yarns. This will enlarge the boiler house and two 400 h. p. boilers will be added.

*Pennsylvania, Philadelphia. The Hulton Dyeing & Finishing Co. have recently placed a contract for the erection of a radial brick stack to be built at their new branch plant at Frankford Ave. and the Pennsylvania R. R.

Pennsylvania, Philadelphia. Haney & Ebener have equipped the building at 1753 and 1755 North Howard St. with machinery for the manufacture of waste, also carding, blending, garnetting, picking and burring.

Pennsylvania, Philadelphia. The Philadelphia Silk Dye Works have recently been incorporated with a capital of $5,000. They will commence operations at Germantown and Hunting Park Ave., where they have equipped a plant for dyeing skein silks.

Rhode Island, Pawtucket. A motor truck has been purchased by the Le Bon Bleach & Dye Works and they will make deliveries by motor truck to Fall River, Mass. The concern has been in business since October, 1912, and the capacity is now 5,000 pounds of bleaching and 5,000 pounds of coloring per day, two new dyeing machines having been recently installed with prospects of a further increase. Their lines include the dyeing and bleaching of cotton goods, artificial silk, tapes, braids, hosiery, stockinette, etc. John Kinniburgh is superintendent, and Matthew Kinniburgh, buyer.

SMALL INVESTMENT
BIG RETURNS

Minimize the loss incurred in breaking in new help to take the place of sick ones, largely caused by transmission of disease through the common drinking cup.

Have you noticed how sickness increases with winter confinement? Impure air and the common drinking cup cause most of it.

The Health Authorities of most progressive States recognizing this have caused laws to be passed prohibiting the use of the "CUP OF DEATH."

You will eventually install bubblers—why not now?

Catalogue explaining all sent upon request.

RUNDLE SPENCE MFG. CO.

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The Metallic Drawing Roll Co.

INDIAN ORCHARD, MASS.

MANUFACTURERS OF

Metallic Rolls

Especially adapted for Cotton Mills. 25 to 33 per cent more Production Guaranteed. Weight Reduced 33 to 50 per cent. No Leather Covering Bill.

WRITE FOR PARTICULARS

FACTS AND GOSSIP.

New York, New Hartford. The bleachery of the New Hartford Cotton Mfg. Company is employing a night shift. This concern manufactures gauzes, surgical dressings and gauze bandages.

New York, New York City. The Ogilvie, Ranney Company, recently incorporated under the laws of New York, will not carry on a manufacturing business. They will sell textiles.

New York, New York City. A charter has been granted the Lithotex Corp. with capital stock of $500,000 to print and engrave on textiles. The incorporators are Harold F. James, 43 Cedar St.; John F. Sheld, 49 Liberty St., and others.

New York, New York City. The Peckham Company, Inc., has been organized under the laws of Delaware, with capital stock of $25,000, to carry on a business of dealing in cotton and worsted goods. The incorporators are Richard T. Peckham, and others.

*New York, New York City. The concern recently reported incorporated with capital stock of $100,000 under the style of the Kahn Textile Co., Inc., will do a business of converting piece goods. No manufacturing will be done.

New York. New York City. A charter has been granted Brooks & Foshay Co., Inc., to manufacture and deal in silk, woolen, linen and laces, with capital stock of $50,000. The incorporators are E. A. Hamilton, N. Y. City; H. W. Smith, Brooklyn; and W. Anderheggen, Jr., Bronx.

Pennsylvania, Philadelphia. William R. Russell, formerly operating the Kensington Skein Silk Dye Works, located on 6th St., above Columbia Ave., which was recently sold out by the receiver, has been discharged as a voluntary bankrupt. It is not known whether Mr. Russell will start up again in the dyeing business or not.

Pennsylvania, Philadelphia. A part of the property of the Sauquoit Silk Mfg. Company, 4015 Clarissa St., has been sold to the city of Philadelphia, and will be used as a portion of the Northeast Blvd.

Pennsylvania, Reading. Stunzi Sons Silk Co., Inc. are advertising for experienced weavers because of a large increase in orders. The outlook is considered very favorable. This concern manufactures dress silks and linings on 200 looms.

Pennsylvania, Scranton. The Electric City Throwing Mills have purchased the plant and business of the Ashley Silk Company on Filmore and Academy Sts., and are continuing the business as before, the change being made to get a Pennsylvania charter. A. F. Kizer continues as president, W. J. Cobb as treasurer, and F. J. Lees, superintendent. The company does commission throwing on 26,000 spindles, operated by steam and electric power. R. E. Cobb and F. J. Lees are the buyers.

Pennsylvania, Scranton. The local plant of D. G. Dery has been shut down on account of a strike of operatives.

RATS KILLED BY SCIENCE

By the use of the wonderful bacteriological preparation discovered and prepared by Dr. Jean Danysz, of Pasteur Institute of Paris. Used with striking success in the United States and Europe for many years.

DANYSZ VIRUS

contains the germs of a disease peculiar to rats and mice only and is absolutely harmless to all animals other than mouse-like rodents. Because of the feverish condition caused by the Virus the Rodents die in the open. The disease is also contagious to them. HOW MUCH TO USE: For factory and mill buildings, from one to two dozen tubes for each 5,000 square feet of floor space. PRICE: One tube, 75c; 3 tubes, $1.75; 6 tubes, $3.25; one dozen, $6.00.

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Geo. W. Gerry & Son, ATHOL, MASS.

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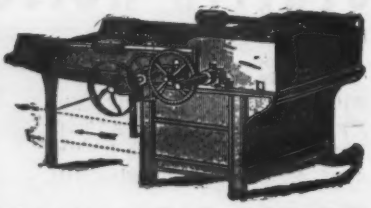

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Improved Cloth Measuring Machines

Lumper and Duster Cylinders Refilled and Repaired

The WM. H. LORIMER'S SONS CO.,

MERCERIZERS AND DYERS

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES

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Skeins, Cones, Tubes and Warps

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117 Hudson Street, - NEW YORK CITY

WORKS AT RENSSELAER, N. Y.

We Manufacture in This Country

Nigrosines **Chrysoidines**
Oil Blacks **Bismark Brown**
Soluble and Alkali Blues

GLOBE DYE WORKS CO.,

Successors to R. Greenwood & Bault

DYERS BLEACHERS AND MERCERIZERS

OF COTTON WARPS AND SKEIN YARNS

Globe Bleach and Dye Works, Oxford and Worth Sts., Frankford, Pa. 140 Chestnut St., Philadelphia

Duxbury's
English Calender Roll Papers
For Embossing and Other Calenders.
Chas. A. Johnson & Co.
Sole Agents for America
55-57 Franklin Street, - New York

THE PEERLESS COMPANY

Willard and Jasper Sts., - Philadelphia

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FOR ALL TEXTILE PURPOSES

Fast Colors on Silk for Worsted Manufacturers
Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

JOHN F. DAVIDSON

(ORIANNA BLEACH WORKS)

BLEACHER

Of Turkish Towels, Cotton Yarns, Underwear, Cotton Hosiery and Tapes.

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MERCERIZERS

Dyers and Bleachers of Skein Yarns. Twines and all Narrow Fabrics. Printers' Knotting Cords a specialty, on tubes or balls (our Fast Black will please you).

T. HOPKINSON, Prop'r and Mgr. G. W. HOPKINSON, Supt.
Office and Works, 259 Forest St., FALL RIVER, MASS.

DYERS of all kinds of YARNS

For Manufacturers of: Men's Wear, Dress Goods, Carpets, Rugs, Upholstery, Hammocks, Shoe Goring, Webbing, Gas and Electric Tubing, Braids and Novelties. Better work, prompter, better service than you get elsewhere.

T. BROPHY'S SONS, Jasper St., above Clearfield St., Established 1845 PHILADELPHIA, PA.

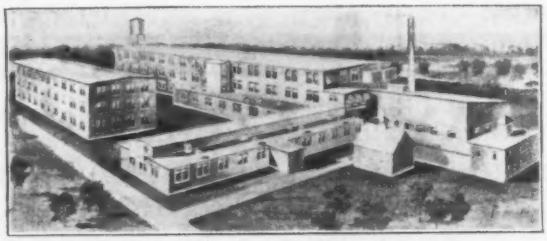
PETER B. MCMANUS
Pres. and Treas.

EDWARD J. MCCAUGHEY
Secy. and Mgr.

JOHN MCMANUS
Vice-Pres.

Home Bleach and Dye Works

INCORPORATED



Dyers, Bleachers and Mercerizers of

Cotton Yarns

in skein and long and short

Chain Warps

Fast Colors a Specialty

Daily Capacity, 40,000 lbs.

Fast Colors and Black for Worsted Trade

Winding on Cop Tubes, Cones and Beams

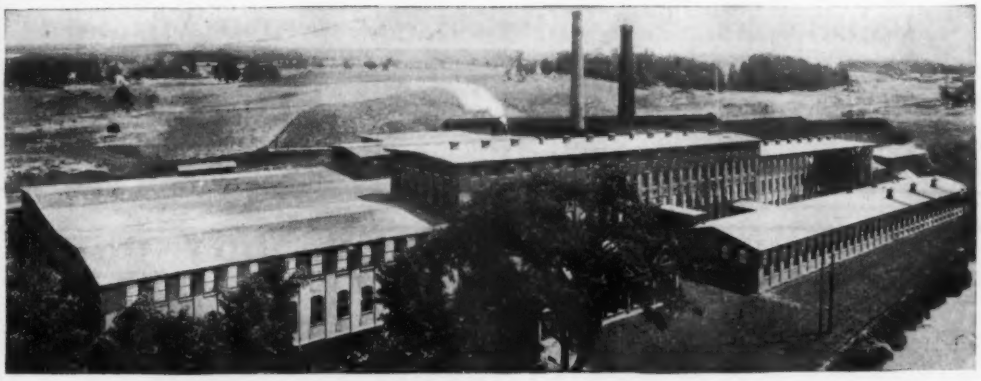
Office and Works, Pawtucket, R. I.

Established 1881

UTICA
WILLOWVALE BLEACHING CO.

JOHN MacMANUS, Manager

CHADWICKS, NEW YORK



Capacity, 30 Tons Daily

Sheetings, Shirtings, Lawns
India Linons

Everything in White Goods

Cassella Color Company

New York Boston Montreal
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Castor Oil and Castor Oil Products

ALIZARINE ASSISTANT BLEACHING OIL
TURKEY RED OIL CASTOR SOAP OIL
SOLUBLE OILS SOLUBLE GREASE
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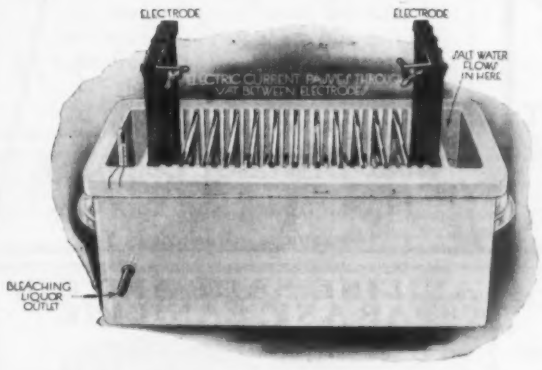

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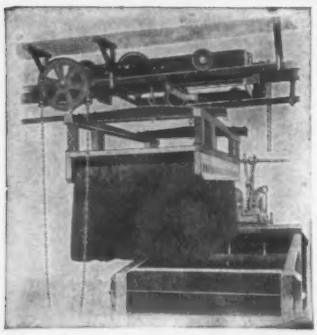

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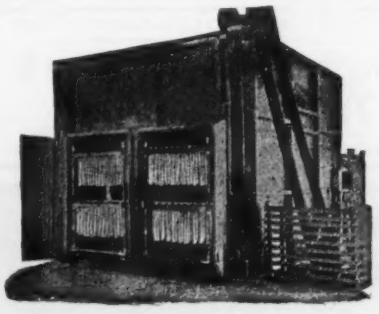

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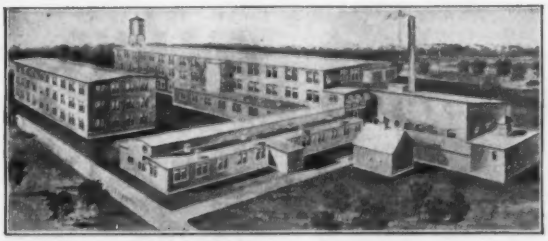

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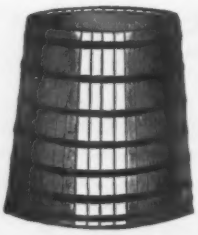

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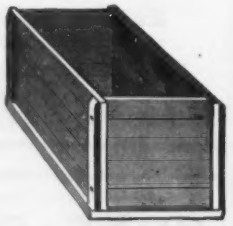

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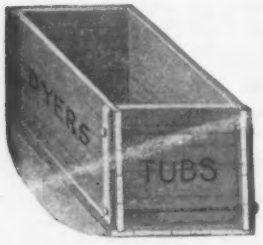

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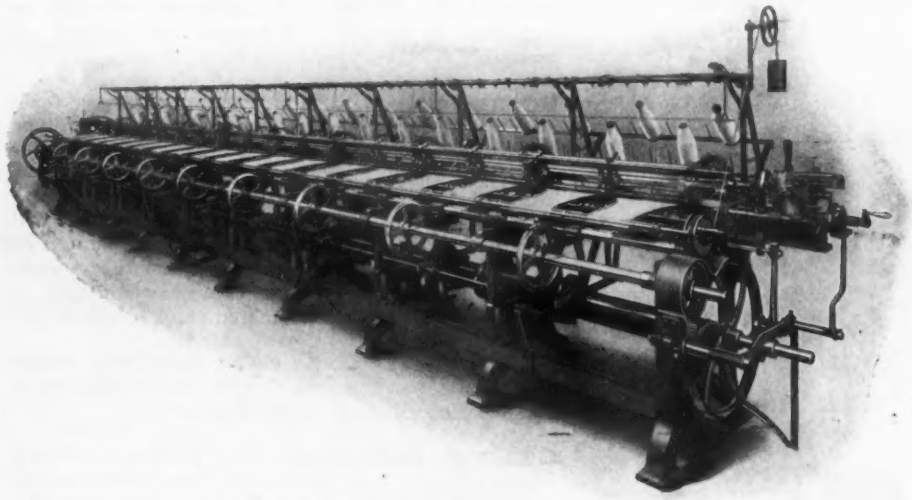

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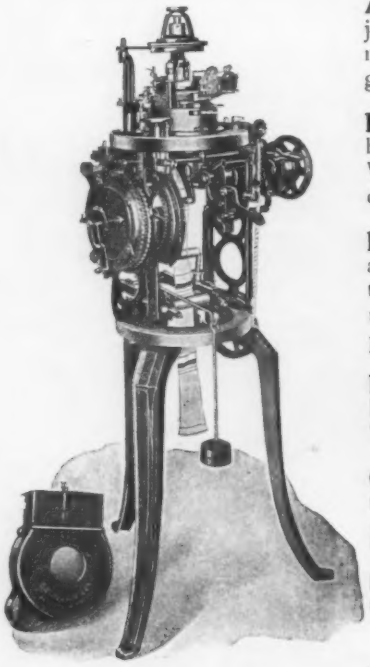

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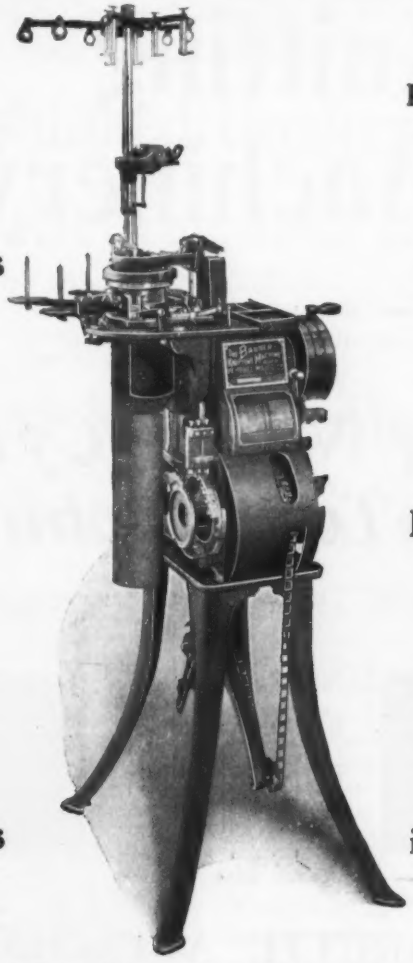

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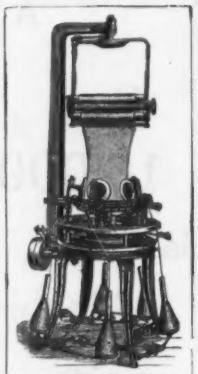

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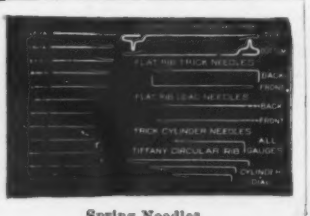

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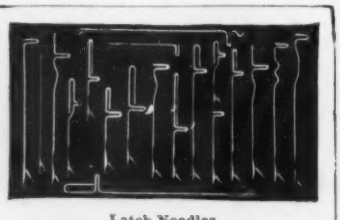

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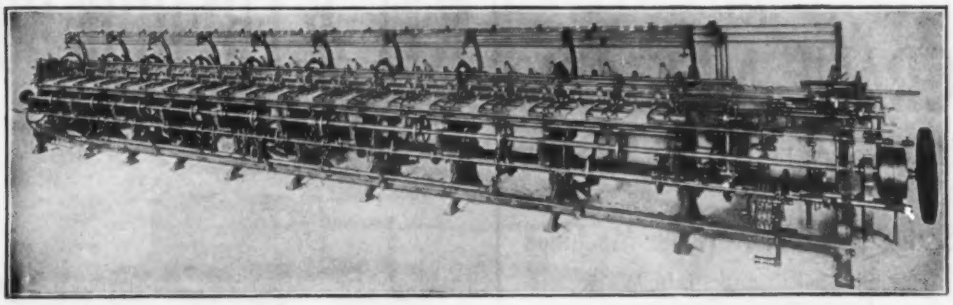

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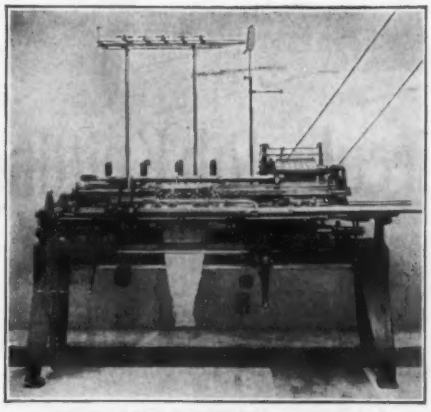

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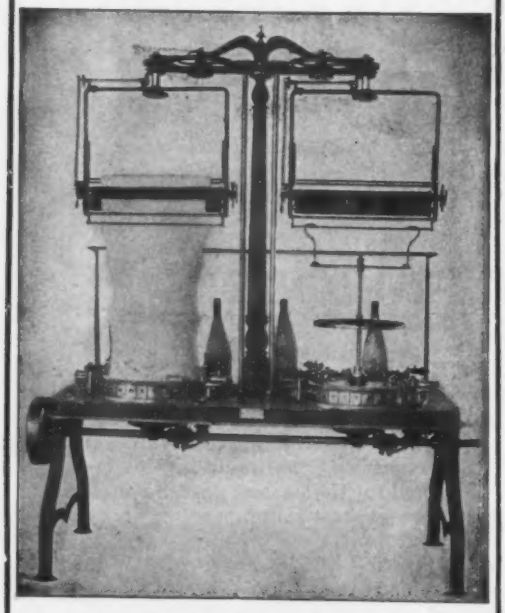

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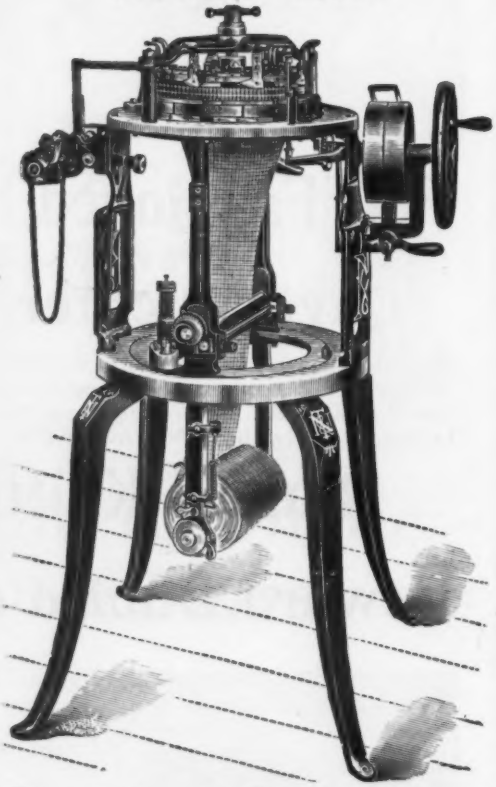

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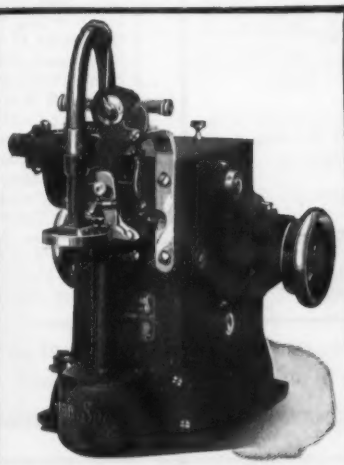
DOUBLE THREAD INTERLOCK SEAM

Perfectly Flat and Elastic.

ENDS OF SEAMS LOCKED GIVING LOOPER FINISH.

HIGHEST DEVELOPMENT in machines of this character.



IMPROVED ADJUSTABLE UNCURLING DEVICE For Underwear Seams.

BOTH FEEDING CUPS ACTUATED

Insuring Positive Feed Upon Both Selvages, Overcoming the objectionable puckered seam

SUSPENDED FEEDING CUP greatly facilitates the handling of work.

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A RARE OPPORTUNITY TO BUY

10 Lamb & Grosser Sweater Machines.
3 Large Crawford Hollow Plate Presses.
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50 Loopers and Seamers, all makes.
60 Ribbed Underwear Machines.
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We are always in the market to buy good Second-Hand Knitting and Finishing Machinery.

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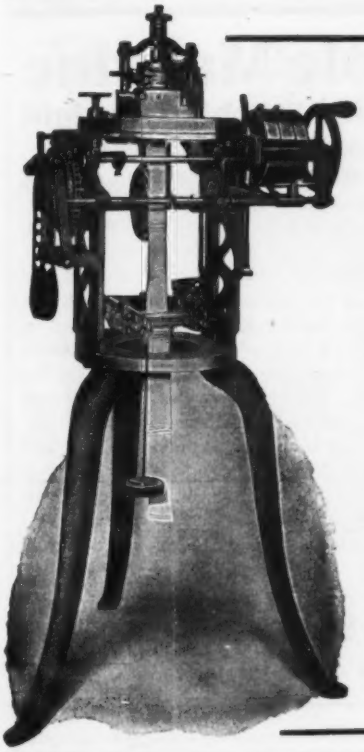
Makers of Two Thread Elastic Lock Stitch Loopers

ALSO ATTACHMENTS for changing our single stitch loopers into the two-thread loopers.



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HOSIERY RIBBERS

with Splicing, Striping, Two-speed, Selvage Welt and French Welt Attachments.

Full Automatic Hosiery Footers

BODY MACHINES, SLEEVERS, etc.

for Underwear, Sweaters, Toques, etc.

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THE MOST COMPLETE LINE OF
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Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
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The Reece Button-Hole Machine

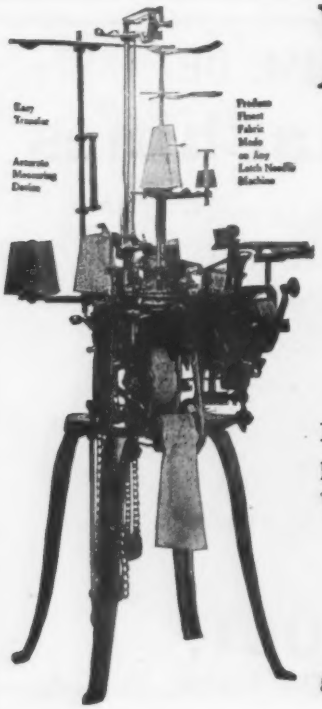
For Cutting and Stitching Straight Double-Barred Buttonholes

This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from ⅛ of an inch in length up to 1 inch, in knit goods, shirts, shirtbands, collars, cuffs, etc., also on knit goods of all kinds. It is superior to all other machines, as it is the *only single thread* buttonhole machine on the market doing away with the bobbin or under thread, thereby making a great saving in the use of thread, and *it will produce more than double the quantity of work of any other machine*, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine, it is finished in every respect and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

The machine is made of hardened steel drop forgings, thus reducing the breaking and wearing of parts to a minimum. *Samples of work and terms sent on application.*

THE REECE BUTTON-HOLE MACHINE CO.

Office and Factory - 500 to 514 Harrison Avenue, Boston, Mass



What Knitters are Saying About the "P.& O." Machine

"We are running this machine beside another popular knitter on silk and art silk plaited hosiery. On the 'P. & O.' machine we are making less menders, a more even fabric and bigger production. In fact it is the best machine we have in our mill."

SAVES 10% ON YARN

Makes Ladies' or Half Hose; garter top; no ravel, silk plaited or mercerized leg; high splice, double sole; advanced toe; linen or mercerized heel and toe.

Write for full particulars

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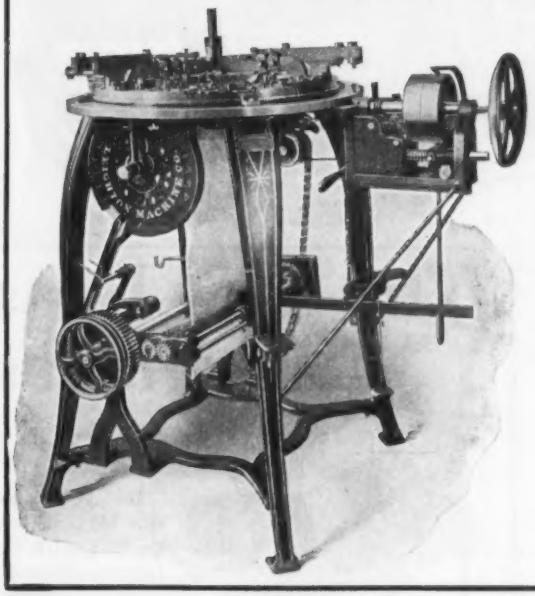
THE LEIGHTON KNITTER

HAS EARNED THE REPUTATION OF PRODUCING



Firm, Elastic Garments

USING LOW GRADE STOCK

THESE MACHINES ARE BEING USED FOR

High Grade Goods

MORE AS COMPETITION INCREASES

Real Efficiency

Means Excellent Stitches with ECONOMICAL OPERATION

For Particulars ask

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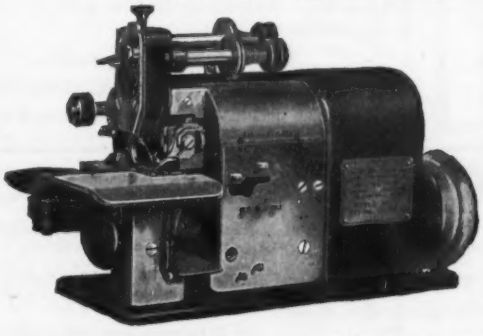
FAST

DURABLE

Light Running

High Speed Overseaming, Overedging and Shell Stitch Machines are



OUR CLASS 60 MACHINES for Trimming and Overseaming in one Operation produce the strongest, best Seams and do it with the greatest economy.

USE STYLE 18 for Horse Blankets. STYLE 17 B or 22 for Bed Blankets. STYLE 35 E SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

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Most widely used; being operated in every civilized country.

Our Collarette Knitter Knits almost any conceivable style and with selvage ends.

Circular Rib Top and Seaming Machines.

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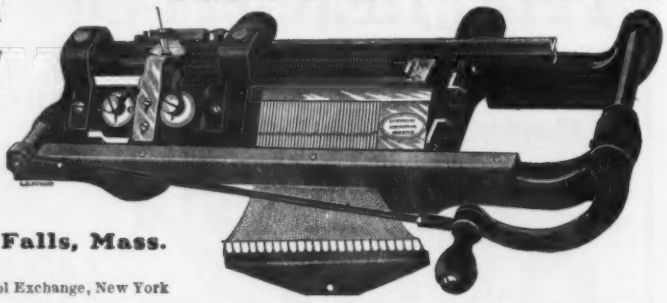

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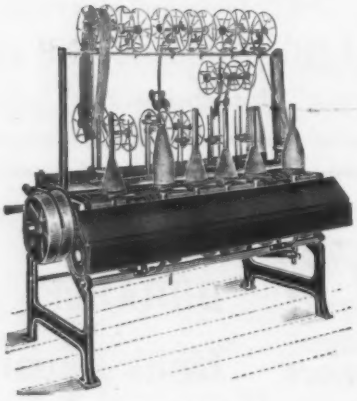

6 SPINDLES UP

The best winder on the market. If you are not using one or more try one.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

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THE BOSS KNITTING MACHINE WORKS,
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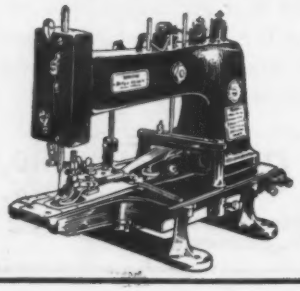
The Elastic Stitch Keeps the Buttons On



The Elastic Stitch Button Sewing Machine successfully overcomes button sewing troubles: Because

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built by

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$10,000,000.00

DO YOU WANT?

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No matter what proportion of these millions you are now getting, you can get more of it if you will make full fashioned hosiery on our machines.

Because, the stockings you make will fit perfectly and bring you repeat orders.

The leading hosiery manufacturers are installing these machines.

If you are thinking of making full fashioned goods take up the question with us—as our success depends upon yours, we will prove to you that we can help you before you spend a cent.

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Full Automatic Knitter

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Six Yarn Fingers

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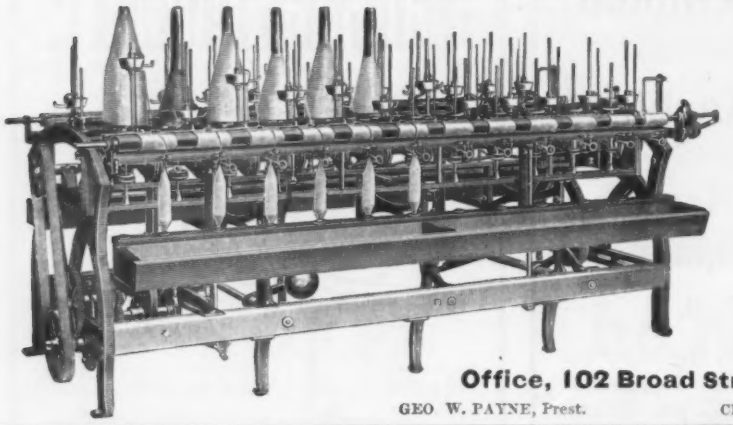
OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers, Wind for Cop, Skein or Bobbin



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Upright Spoolers

To Spool from Cop, Skein or Bobbin

Doubling Spoolers for doubling 2, 3 or more ends into one

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler Guides, Bolsters and Stops Made and Repaired at Short Notice.

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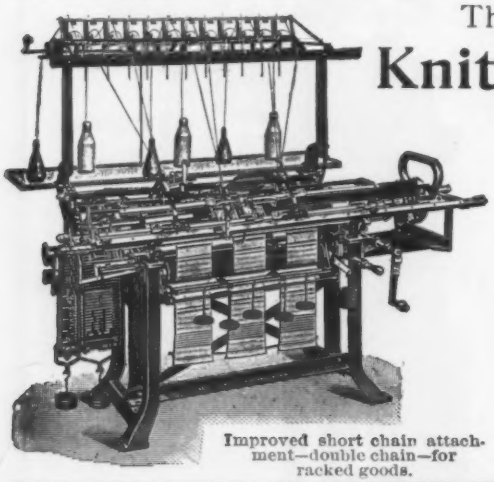

Improved short chain attachment—double chain—for racked goods.

That is the Brand of the

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160,000 Knitting Machines in use all over the Universe

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Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

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Highest Grade

Machine for rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Uses pointed staples, cannot tear the finest fabric.

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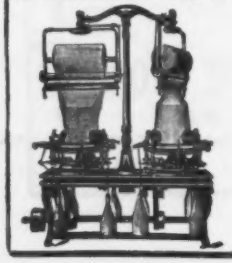
We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

Cross Question 123. How long have you been a manufacturer of knitting machines? Answer I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLEY Was born, according to his testimony in the case above cited.

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A Simple, Inexpensive Machine, for **Attaching Tickets** on **Hosiery, Underwear,** etc.

It uses a pointed staple, **CANNOT INJURE THE FINEST SILK HOSE**; can be set aside when not in use.

Is operated by foot power and has a **patented WORK-HOLDING DEVICE carrying one dozen or more pairs of hose, keeping them in perfect alignment and presenting the tops in position to receive the tickets AT LEAST TWENTY-FIVE PER CENT QUICKER** than by any other method now in use.

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Apply to the Manufacturers

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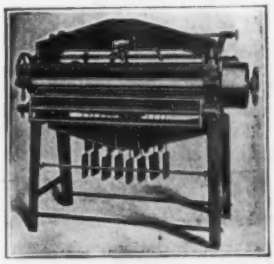

The "1912" Cloth Cutting Folding and Winding Machine.

This machine will cut down operating expenses. It does in one operation the work which is now being done in two. It cuts the cloth, folds the edges and rolls them up in one operation, and at all times gets one more strip out of a bolt of cloth than is possible with the old method of cutting. At the same time it measures the bolt of cloth to show the manufacturer whether or not he is getting the number of yards he is paying for. With the high price of cotton to-day every knit goods manufacturer ought to look into this to see if he is getting the maximum efficiency at the least expense. You will find when you come to figure it up in the course of a year that the labor it saves is a big item.

Also have other labor-saving devices, and upon application you can get prices and full information on same.

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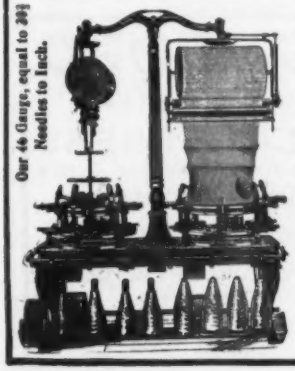

in building Spring Needle Knitting Machines. Have succeeded knitting the finest and the coarsest work ever made on Spring Needle Knitting Machines in this country, any work from 3 to 46 gauge. Our Machine is of the highest class.

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¶ A New Type of Hosiery Machine—being the result of 22 years of actual experience in studying the needs of the trade.

¶ Your investigation desired.

¶ Can be seen running at all times.

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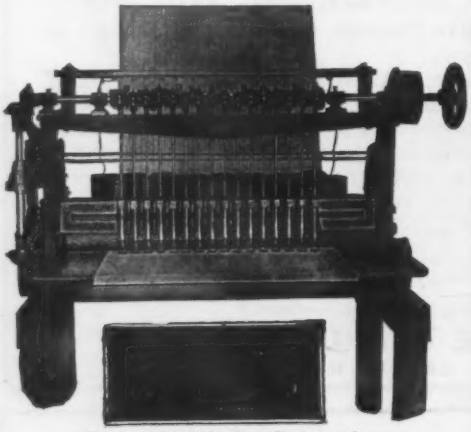

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Built for all purposes where a number of rows of stitching are required. ¶With either form of stitch, single thread chain, double thread chain, or lock-stitch, sewing material from 1-16 inch thick, up to 1 inch thick, and up to 120 inch wide. ¶Furnished with any required number of needles, spacing to suit requirements. ¶We also build **Paper Slitting Machines** and design special machinery.

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Fourteenth year. Many graduates filling positions of trust and responsibility. Catalogue sent free on application. Address,

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RAG PRESS BOARDS

Especially Adapted to

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Medals awarded at Paris and Melbourne Expositions.

Jacquard Cards of all Grades for Fancy Weaving. Accurately Cut to Any Size.

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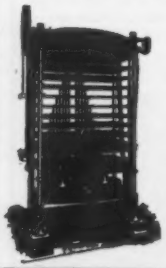

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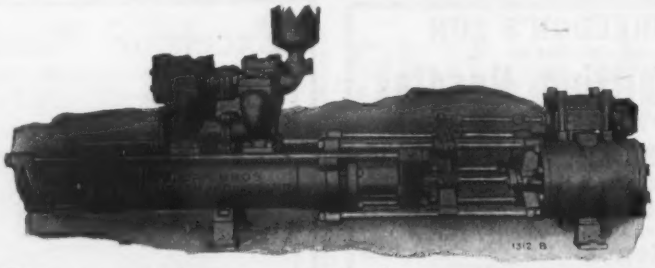


BOILER FEEDER FOR 250 LBS. WORKING PRESSURE

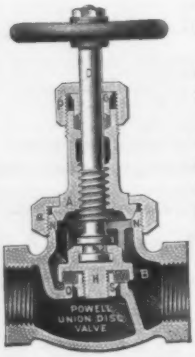
New York Sales Office 30 Church Street

DEAN BROS. STEAM PUMP WORKS. INDIANAPOLIS.

NOT IN THE PUMP TRUST

POWELL VALVES

FIVE POINTS OF EFFICIENCY COMBINED IN THE POWELL UNION COMPOSITE DISC VALVES



For Hot Water or Steam Heating

1. Body symmetrically designed and well proportioned.

2. Metal distributed to meet the most wear.

3. Union bevel ground joint connection between body and bonnet. Red lead or cement unnecessary to make them tight.

4. Disc holder (*H*) permits the use of any make of rubber discs.

5. All parts are made to gauge and are interchangeable.

THE WM POWELL CO.

DEPENDABLE ENGINEERING SPECIALTIES

CINCINNATI, O.

International Steam Pump Co.

Notice to the Trade

The Receivership of this Company was the result of the general financial depression and the lack of sufficient current cash working capital. The plants involved in the Receivership are

Deane Steam Pump Co.
Snow Steam Pump Works
Laidlaw-Dunn-Gordon Co.
Jeanesville Iron Works Co.
International Steam Pump Co., Gas Engine Dept.
Clayton Air Compressor Works

It is expected that, as a result of the Receivership an early reorganization will be effected, resulting in a closer unification of the Company's various interests, and better operating conditions.

Henry R. Worthington
Blake & Knowles Steam Pump Works
Power & Mining Machinery Co.
Holly Manufacturing Co.
Fred. M. Prescott Steam Pump Co.
International Gas Engine Co.

have separate properties and accounts, and are not involved in the Receivership.

Under the Receivership the manufacturing operations of the Company will be continued without interruption. All deliveries on orders now in progress will be promptly made, and we are prepared to manufacture and deliver new orders with the same promptness and high class of workmanship and material as heretofore.

We bespeak for the Company the continuance of the valued business which has been extended to its several plants for many years.

International Steam Pump Co.

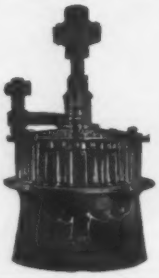
C. Philip Coleman
Grayson M. P. Murphy
Receivers

I-3.2

THE SAMSON TURBINE WATER WHEEL

AND WHY IT IS BEST IN

POWER, SPEED AND ECONOMY



The Leffel Wheel, now developed into the Improved Samson Turbine, will continue to maintain, as it has for the past 49 years, its superiority because of features that give it wonderful power and high velocity, economy in the use of water, and an unusual steadiness of motion under variable gateage.

These are points of merit established by scientific and experimental tests.

Send for catalog illustrating and describing the different types and proving their merit

***The* James Leffel & Co.**

502 Lagonda St. Springfield, Ohio

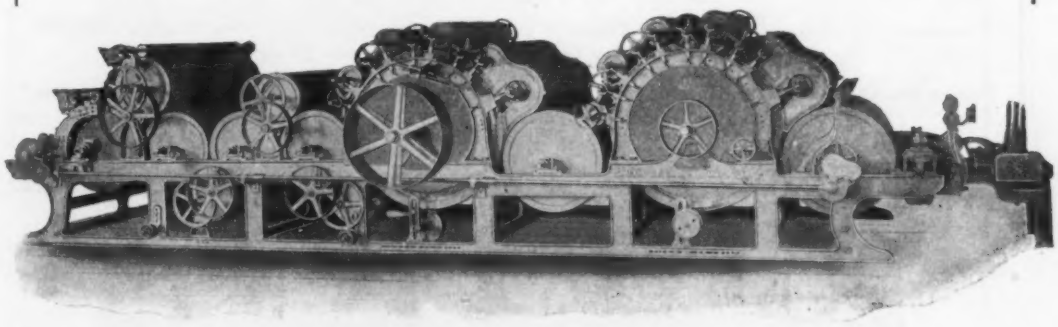
SMITH & FURBUSH MACHINE CO.

PHILADELPHIA

WORSTED CARDS CIRCULAR No. 21A

Fifty years experience enables us to build WORSTED CARDS as they should be built. We invite comparison with imported Machinery. Send us your specifications and we will build a Worsted Card to meet your requirements.

We illustrate one of our most popular styles.



WORSTED CARD—Style No. 48

Iron Cylinders 48", 54" or 60"

Self-aligning Ball Bearings on Main Cylinders

Case Hardened Journals on all Fast Cylinders

Self-aligning Sleeve Bearings

Convenient and Positive Adjustments

Many Improved Features

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Our Worsted Self Feeder has all the desirable improvements

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Manufacturers of

PICKERS—Lumpers; Rag, Burr, Wool, Cotton, Jute, Fearnaught and Garnett Pickers; also Rag, Carpet and Jute Shredders.

WILLOWS—Continuous Cotton Stock Opening, Cleaning, Metal Extracting and Condensing Outfit; also Square Box and Cone Willows or Dusters.

GARNETT MACHINES—For carding cotton and woolen waste clippings, etc.; also for manufacturing cotton, wool and jute batting or felts.

FEEDS—Self-feeds for cotton, wool, worsted or jute; also Camel Backs, Blamires and Apperlys.

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RECLAIMING MACHINE—For Opening and Cleaning various kinds of Cotton Mill Waste.

CARDS—Woolen, Worsted, Cotton Waste, Shoddy, Hair and Jute Cards; also Special Cards for the manufacture of Wool Hats.

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TWISTERS—Plain or Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS—Automatic Jack Bobbin Builder and Adjustable Creel for different length spools.

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A complete line of Machinery for Manufacturing Gunny Bagging from Old Gunny Bagging; also for Manufacturing Mop Yarn and Rope from Cotton Waste.

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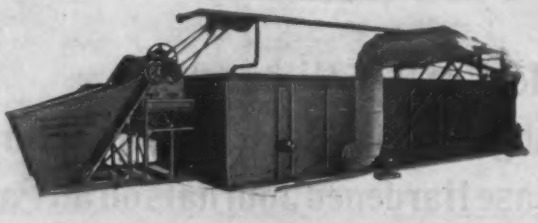
Special Circulars furnished for each Machine.

PROCTOR DRYERS

Formerly the "CYCLONE"
Fireproof



Proctor Automatic Dryer for Cotton, Wool, Etc.

These dryers give greatest capacity at least cost

If you do any drying at all
Send for our illustrated book Y

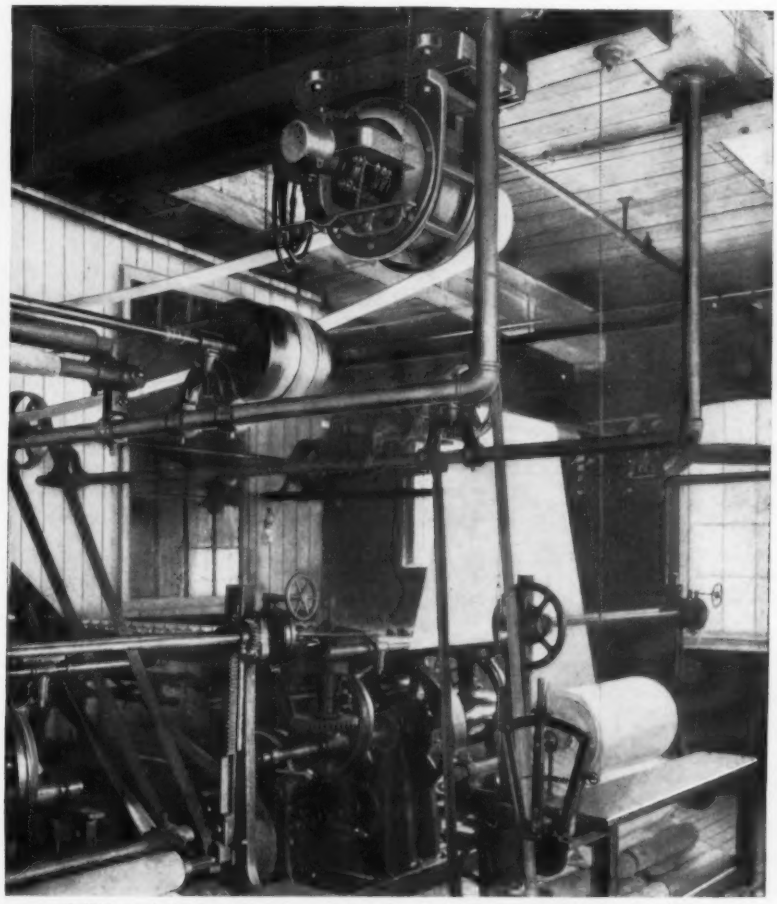
The Philadelphia Textile Machinery Co.

Philadelphia, Pennsylvania

H. G. Mayer, Charlotte, N. C.

The Guarantee of Excellence

On Goods Electrical



G-E Motor Driving Tenter Frame, Windsor Print Works, North Adams, Mass.

The Guarantee of Excellence

On Goods Electrical

Satisfactory Operation Sells Nine

THE satisfactory performance of the electrical equipment shown above sold six to the same mill and three to a neighboring mill. ¶ Any degree of speed change desired can be obtained with this G-E motor drive as there are no set speeds or "steps." ¶ Replace mechanical speed changing devices and isolated low efficiency steam engines with their long steam condensing pipes by this highly economical motor drive.

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MOTOR AGENCIES IN ALL LARGE CITIES AND TOWNS

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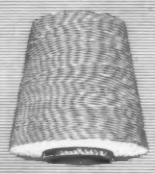
PARTS ALL INTERCHANGEABLE



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who visited our space at the recent Exhibition in Philadelphia appreciate that from any mill operating Universal Winders they can order yarn on cones wound with spacing between the strands exactly right for insuring free delivery to knitting machines. The differences between a cone wound in this manner on a Universal Machine and an open wound cone made on any type of drum winder are many.

First—The spacing between layers on the Universal Cone continues the same from start to finish avoiding the possibility of "ribbon wind" or "close" places in the cone.

Second—Soft spun yarn is more delicately tensionized and will come from the cone an evener and stronger yarn than from any type of drum-driven machine.

It is to the advantage of knitters to specify

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and in ordering indicate the exact amount of spacing desired between yarns. This capacity for fine adjustment is one reason why the largest knitters of soft spun yarn who do their own spinning wind same exclusively on

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